UDOT RESEARCH DIVISION
ANNUAL WORK PROGRAM
FISCAL YEAR 2008

prepared by:
Utah Depatment of
Transportation
Research Division
Salt Lake City, Utah

Report No. UT-07.12

December 2007

UDOT RESEARCH
ENGINEERING THE FUTURE

REPORT NO. UT-07.12

UDOT Research Division Annual Work Program: Fiscal Year 2008
December 2007

Prepared in cooperation with the U.S Department of Transportation, Federal Highway Administration, Utah Division Office

The UDOT Research Division is charged with promoting, executing, and implementing research activities within the Utah Department of Transportation, to further the mission of the Department and increase the Department's use of new products and techniques. Aided by the Federal Highway Administration, the Research Division manages a program funded by federal and state money toward these goals.

This Annual Work Program document outlines the goals, objectives, structure and programs of the Research Division, presents the budget for FY2008, lists the projects which will be undertaken during the year, and provides a summary of progress on on-going efforts. This information satisfies the Federal requirement for reporting the allocation and use of Federal funds in a state transportation research program. A certification of compliance with Federal regulation is included in this report.

Key words: Utah transportation research needs, research funding and budget, highway, prioritization

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This document is unclassified.

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Transportation Research at UDOT

Transportation Research at UDOT

Research, one of the principal missions of the first U.S. national highway program in 1921, remains a critical component of the successful operation of the Utah Department of Transportation (UDOT).

The UDOT Research Division is charged with promoting, executing and implementing research activities within the Utah Department of Transportation, to further the mission of the Department and increase the Department's use of new products and techniques. Aided by the Federal Highway Administration, and in collaboration with other public and private entities, the Research Division manages a program funded by federal and state agencies toward these goals.

The programs comprising the UDOT Transportation Research Division are as follows:

- Applied Transportation Research Projects
- Experimental Features
- New Products
- Technology Transfer

This Annual Report outlines the structure and programs of the UDOT Research Division, presents the projects which will be undertaken during fiscal year 2008, and summarizes the FY2008 budget. This information satisfies the Federal requirement for reporting the appropriate allocation and use of Federal funds in a state transportation research program. In addition, this Annual Report informs our partners and customers about progress being made with various research activities.

The budget allocated for UDOT research activities during Fiscal Year 2008 includes $2.718 million from federal funds, including the required state matching amounts. Some of these federal funds are being rolled over from previous years for on-going projects. The budget also includes $0.682 million from state funds. State funds include those funds required to match the federal contribution. The overall multi-year research program currently consists of research projects totaling $5.607 million.

Strategic Plan - Vision and Goals

The Utah Department of Transportation is a goal oriented organization. The Department's Strategic Goals are exemplified in what are known as the final four, here listed:

1. Take Care of What We Have
2. Make the System Work Better
3. Improve Safety
4. Increase Capacity

These strategic goals provide vision and guidance for the groups and divisions within UDOT, including the Project Development group and the Research Division within it. Project Development gives further guidance by identifying our primary internal customers, the UDOT Regions, and by setting goals and standards as listed below:

1. Have Excellent Customer Service
2. Be Technical Experts
3. Provide Effective Training
4. Have Continuous Self Improvement
5. Provide for Policies, Procedures, Standards and Specifications
6. Be a Leader for Tomorrow's Innovative Practices
7. Build Tomorrow's System Today

The Research Division is in a unique position because it can help achieve these goals more efficiently and effectively, by seeking and implementing innovative solutions. Our slogan reflects this position and our attitude:

"Tools for Better Transportation Tomorrow"

Our mission, similarly, reflects the goals listed previously, reinforcing the role of Research in achieving these goals:

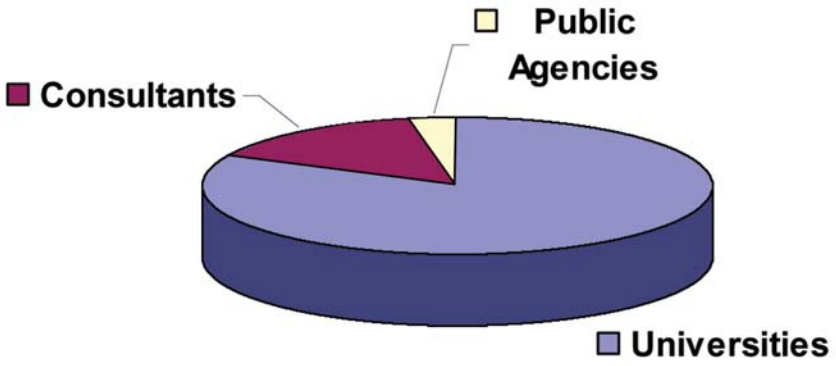
> ***"The Research Division will be at the forefront of transportation innovation, providing information, tools, and resources to improve planning, design, construction, operation and maintenance of Utah highways."***

The Research Division is continuously looking at new ideas, innovations, methods and ways to improve transportation in Utah. Yearly we organize workshops to collect ideas from anyone interested in improving our system. We regularly visit with our customers and providers to learn of needs and to seek innovative solutions.

Yearly we attend national committee meetings and national research organization's meetings to learn about new ideas. UDOT is investing heavily in new technology because it believes there are better ways to do things. From Materials to Environmental to Maintenance, Research is providing innovative ideas and tools to improve transportation.

Customers and Partners

We could not accomplish our goals without our partners. Our partners fit in three major categories: Investigators, Technical Experts and Champions. These come from four major groups: Consultants, Academia (Universities and Colleges), Public Agencies (Including UDOT) and Non-profit Organizations as shown in the graphic below.



Investigators

Most of the research projects are completed by the three local major universities: University of Utah, Utah State University and Brigham Young University. Consultant firms and other government agencies complete the rest of the projects. The list below summarizes those organizations who are currently acting as investigators for our research projects.

Investigators:

ARA Inc.
BC Traffic Engineering
Bio-West
Brigham Young University
Dongre Laboratory Service
FHWA
Horrocks
Intellisum
Intermountain Labs
Interplan
Iworq
University of Wyoming
URS
USGS
Utah State University
University of Utah
Western Transportation Institute
(Montana State University)

Each project is managed by a research project manager. The project is reviewed for content by Technical Advisory Committees (TAC). Members of TAC team include project champions (principal proponent of the project) and experts from UDOT and other various organizations (public and non-public) that have knowledge and talent on the subjects being studied. TAC teams meet regularly to review the assigned projects and give directions to the investigators.

Champions for the various UDOT projects:

Abdul Wakil	UDOT Research
Ahmad Jaber	UDOT Planning and Programming
Steve Bartlett	University of Utah
Bill Lawrence	UDOT Planning and Programming
Boyd Wheeler	UDOT Structures
Craig Hancock	UDOT Engineering Technology
Denis Stuhff	UDOT Central Hydraulics
Dan Betts	UDOT Roadway Operations
Darrell Giannonatti	Consultants
David Eixenberger	UDOT Bridge Operations
Dave Kinnecom	UDOT Traffic Operations Center
Degen Lewis	Consultants
Fred Doehring	UDOT Management
Gary Kuhl	UDOT Planning and Programming
Jim Higbee	UDOT Geotechnical
Jon Bishoff	UDOT Geotechnical
Kevin VanFrank	UDOT Materials
Kris Peterson	UDOT Construction
Leslie Heppler	UDOT Geotechnical
Michael Fazio	UDOT Research
Norton Thurgood	UDOT Region 1 Maintenance
Pat McGann	UDOT Region 4 Maintenance
Peter Negus	UDOT Construction
Ralph Patterson	UDOT Traffic Operations Center
Ray Cook	UDOT Structures
Richard Clarke	UDOT Maintenance
Richard Miller	UDOT Structures
Rod Terry	UDOT Region 1
Michael Romero	Consultants
Shana Lindsey	UDOT Research
Shane Marshall	UDOT Environmental
Terry Johnson	UDOT Environmental
Tim Biel	UDOT Materials
Tim Boschert	UDOT Transportation Planner
Tim Ularich	UDOT Maintenance
Todd Jensen	UDOT Legacy

Performance Measures

Objectives

Research has many specific and measurable objectives/goals that define the level of service we render. Here is a list of the research objectives and relative measures:

Research Program

Select research projects that meet the needs of UDOT
Complete the annual research program document by October 1
Have the program approved by November 1
Effectively program all the Federal and State funding allocated to research
Maintain a positive and mutually beneficial relationship with our University partners

Research Project Management

Complete each research project on schedule, and on budget.
Publish each completed research final report a month after completion
Review each final report for conformance to a consistent style before publication
Work with the project Champions to implement the results of successful projects

Experimental Features

Evaluate new products which have immediate potential uses for UDOT
Collect field information on each project managed
Publish findings of field evaluations
Provide report to FHWA on each Experimental Feature
Publish evaluation results on the UDOT website

Product Evaluation

Evaluate new products submitted by vendors and/or UDOT personnel
Update the approved product list monthly

Technology Transfer

Provide at least twelve webinars per year
Perform Literature Searches in 2-3 business days
Prepare white paper, in a one-week period
Keep UDOT updated on innovations & advances by sharing information within a one-week period.
Provide 5 to 10 library sessions per year
Dissemination of information on biweekly basis
Coordinate twelve Washto-X Sessions a year
Research website monthly maintenance and updates
Manage the Lester Wire library
Distribute research reports to libraries and other interested parties.

Research is measuring and evaluating the level of performance, striving to achieve excellence.

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UDOT Research Division

Who We Are - Staff - Organization Structure

What We Do - Programs

Funding

UDOT RESEARCH DIVISION

Who Are We?

The UDOT Research Division is the entity within the Department charged to promote, execute and implement research activities. These activities are broad, ranging from advancing the science of transportation engineering in emerging areas to implementing the use of new products on a daily basis. The research reach involves planning, design, construction, operations, and maintenance activities. Individual research efforts sometimes involve periods of a few months, and other times require many years to run their full course. These research activities are also collaborative, involving the many entities within the Department, the Federal Highway Administration (FHWA), and the partners in the civil engineering academic, consulting, manufacturing, and construction world. Funding for these research endeavors comes primarily from the FHWA and the State of Utah, but other Federal, State, and private sources also contribute.

The UDOT Research Division was separated from the Materials Division in 1993, bringing research projects, product evaluation and development, and technology transfer activities into a central, and somewhat autonomous, function. The Research Division is housed within the UDOT Project Development Group, along with many other central design and support functions.

RESEARCH DIVISION STAFF

Name	Title	Responsibilities
Rukhsana Lindsey, P.E.	Director of Research and bridge operations	Leadership, Division and Bridge Operations Management, Maintenance and Traffic & Safety Projects
Michael Fazio, P.E.	Deputy Director of Research	Division Management, Transportation Pool Funds, Personnel, Hydraulics and Environmental Project Management
Blaine Leonard, P.E.	Research Program Manager	Program Funding, UTRAC Workshop, Project Management, Seismic and Geotechnical Projects
Daniel Hsiao, P.E.	Sr. Research Project Manager	Project Management, IBRC and Structures Projects, Accelerated Bridge Construction
Doug Anderson, P.E.	Research Project Manager	Project Management, Data Almanac, Planning Projects
Ken Berg, P.E.	Product Evaluation Engineer	Experimental Features, Project Management
Richard (Barry) Sharp	New Products Manager	New Products Processing and Testing
Abdul Wakil	Technology Transfer Engineer	Technology Transfer and Implementation, Library
Debbie Heim	Research Technician	Experimental Features and Project Support
Esther Olsen	Executive Secretary	Program Support, Office Support
Joni DeMille	Librarian	Document Processing, Mail Services, Literature Searches
LaRie Cutler	Secretary	Office Support
Henry Bryan	Financial Analyst	Project Accounting and Tracking
Chase Njord	Research Technician	Research Project Database

Research Division Programs and Services

The UDOT Research Division is responsible for a variety of programs. These can be summarized in the following four areas:

- Applied Transportation Research Projects
- Product Evaluation
- Experimental Features Program
- Technology Transfer

Applied Transportation Research Projects

Research activities cover a broad range of objectives and employ varied methodologies and approaches. The primary goal of research activities is to identify the needs of the Department and to meet those needs with techniques, information, tools, products, resources, and training. These activities advance the state of the art, identify useful scientific tools, and evaluate materials and processes which can bring innovation to our work. Research efforts are generally applied, that is, they focus on results that can be implemented in the near future.

Historically, research objectives have included measurement of material properties and their longevity, verification of new and extended design practices, evaluation of the effectiveness of current procedures, application of new technologies, consideration of economic benefits, and development of policy. Topics have included structures, foundations, pavements, roadway geometrics and design, hydraulics and hydrology, traffic planning, traffic safety, intelligent traffic systems, environmental considerations and impacts, maintenance, and construction processes and management. Methodologies used to advance research projects include literature searches, surveys, synthesis of practice, computation and analysis, physical and analytical modeling, physical testing, and long-term monitoring. Studies can be brief and fairly superficial, long-term and complex, or anywhere in between, depending on the goals of the research.

The benefits of research are also varied. Some projects demonstrate that a new technique or tool is not effective, not useful, or not applicable to the Department. This result forestalls the use of this new approach and saves time and money in later failed efforts. Some projects validate processes that are already in use, and verify that these techniques are still applicable and valuable. These projects sometimes determine that minor changes will yield higher efficiency, or produce manuals, specifications or training to improve the use of existing procedures. Other projects demonstrate that new materials, techniques or tools are successful and applicable, and encourage those to be implemented in the Department. Previous studies have suggested that every dollar invested in research within the Department yields twelve dollars of return, on the average.

The selection of research projects to be undertaken usually follows one of several processes. The primary process is the UTRAC Workshop, from an acronym for the Utah Transportation Research Advisory Council. Other sources of research projects include directives from senior Department leaders or the state legislature, projects associated with special funding opportunities (Innovative Bridge, Pooled Fund, the I-15 National Test Bed, etc.), and projects developed as follow-on phases of future projects.

The UTRAC Workshop is a collaborative, annual workshop, organized to assess the needs of the Department and define research projects to address those needs. The UTRAC Workshop was initiated in 1993, and has been a very successful process. The process has been modified several times, and underwent some significant revisions in 2005. The revised process initiated in 2005 was recognized with an AASHTO President's Award for Research.

The detailed process used to prioritize research projects, including the UTRAC Workshop, is presented in the annual UTRAC Workshop Proceedings. That document includes a complete list of Problem Statements evaluated and selected. In essence, the process involves gathering Problem Statements from UDOT personnel and outside researchers and consultants, evaluating and refining those statements during a day-long workshop, and prioritizing the statements through a voting process. The workshop usually consists of about 140 people, from inside and outside UDOT, who divide into nine discipline-specific groups to evaluate the statements.

The list of research projects identified and prioritized through the UTRAC process is reviewed and approved by senior leaders in the Department. This provides the opportunity for those leaders to modify priorities, remove projects, or add projects which better support the strategic direction and goals of the Department. At other times of the year, these leaders occasionally direct that other projects be initiated, usually because of newly arisen needs, opportunities in the industry, or to meet needs identified by or as a result of decisions from the state legislature.

Research projects are sometimes initiated by various Divisions within the Department as a result of their efforts to secure outside funding. In many cases, the Research Division becomes involved in the management of these projects. Examples include the annual Innovative Bridge and Highways for Life programs operated by the

FHWA, instituted to encourage innovative techniques, methods and materials in the construction and operation of highway bridges. Another special program is the I-15 National Test Bed, a special, multi-year appropriation from Congress to take advantage of research opportunities on the I-15 Reconstruction Project in Salt Lake County.

Another source of research projects is the Pooled Fund program, also operated by the FHWA. Pooled Fund is a tool for states to pool their resources to accomplish common purposes. Any state, or the FHWA, can initiate a Pooled Fund project by simply soliciting interest from other agencies. After the solicitation, interested parties contribute funds to a central account, and jointly participate in the management and oversight of the project. The original solicitor is usually the leader and manager of the Pooled Fund project.

Since these projects arise throughout the year, funding is applied to individual projects from Research Division resources at the discretion of the Director of Research.

The UDOT Research Division also supports the Transportation Research Board, which hosts an annual transportation research conference, and the FHWA National Cooperative Highway Research Program (NCHRP), which undertakes research of interest to many states, and other similar federal programs.

At the completion of a research project, the Research Division participates in the publication and distribution of reports, manuals, and specifications, the preparation and execution of training seminars and workshops, and the process of implementing the results into practice within the Department. Reports are also made available on the Research Division web page, and in hard copy to public libraries.

■ Product Evaluation

The Research Division has the primary responsibility for managing and conducting the new product evaluation process for UDOT. Each year, over one hundred requests are received from vendors of various transportation-related products to have their product used on UDOT projects. The New Product Evaluation program processes and evaluates these requests, using a consistent, unbias, methodical approach to prioritizing the evaluation and approval of these products.

Vendor requests are submitted on a standardized form, and are reviewed by the New Products Manager. They are then submitted to the New

Product Evaluation Panel (NPEP), which meets monthly to review the submitted products. This panel is composed of individuals from various functional units within UDOT that are concerned with the use of products and materials. They determine whether the product meets UDOT specifications, does not meet specification, or requires further evaluation. Those products that meet UDOT specification are entered into an Accepted Product Listing (APL), and are available for use by UDOT Preconstruction and Construction personnel, their Consultants and Contractors. Those that do not meet the specification, but are considered to meet other Department needs not addressed by UDOT specifications, are entered into a Performance Data Products Listing (PDPL), which documents the features and performance of the specific product. These lists are maintained as a permanent database, and are published and distributed within the Department. Products that do not meet either of the above criteria are classified 'Informational' and files are kept in the database for reference.

Another component of the New Product Evaluation process in participation is the AASHTO National Transportation Product Evaluation Panel (NTPEP), a cooperative, nation-wide effort to share data on new products. UDOT participates in the panel as a voting member, and financially supports the program. Successful evaluation of a product by NTPEP may eliminate the need and cost of evaluating the same product at UDOT.

Experimental Features Program

Selected projects from the New Products Evaluation program occasionally warrant field testing to verify their performance. These field tests, usually on a small scale, are known as Experimental Features. The Research Division is responsible for testing these new products, providing a real life test bed, and checking the product's specific features before recommending their use on the highways.

Experimental Features testing usually addresses such issues as installation techniques, material handling, construction, and product durability. The results of these tests are published and distributed within the Department. In addition, the progress and results of these tests are provided on the Research Division web page. Based on the results of Experimental Feature testing, products may be added to the APL of PDPL lists described above.

Technology Transfer

Technology Transfer initiatives are also the responsibility of the Research Division. Technology Transfer includes literature searches, white paper preparation, state-of-the-art surveys, market ready technologies implementation, technology transfer library sessions, best practices

evaluation, distribution of electronic news and publications, sharing of research results, preparation of quarterly Research Division newsletters, maintenance of the Research Division web page and management of the Lester Wire Library at the UDOT headquarters.

A series of video conference workshops, known as WASHTO-X, is also part of the Technology Transfer program. This program, a cooperative initiative of FHWA and several western state DOTs (thus the Western AASHTO Information Exchange acronym), facilitates the sharing of information, ideas, and practices among the states. Oversight and management of the Local Technical Assistance Program (LTAP) is also a responsibility of the Technology Transfer program. LTAP, operated through Utah State University in Logan, Utah, serves local government agencies through training and technical support. Innovative products, methods, and processes used at UDOT are shared through this program. In addition to this annual program, the LTAP staff at Utah State has initiated a special program to showcase new products and techniques. Known as the LTAP Showcase, some dedicated federal funding was used to fund this program beginning in FY 2007.

Funding

Funding for research efforts at UDOT is provided by various federal and state sources. The primary sources of funding are the State Planning and Research Program (SPR) and the State Construction and Administration funds. Other federal funding is made available through programs like the Innovative Bridge program, the I-15 National Test Bed special appropriation from Congress, other state funds allocated by the Department, funds from other states assembled in the Pooled Fund system, and matching funds through the University Transportation Center program or private sources.

State Planning and Research (SPR)

For many years, the federal government has supported transportation research at the state level though the allocation of State Planning and Research (SPR) funds. Federal law (US Code Title 23, Section 505) stipulates that two percent of the transportation funds apportioned to the states in a given year be used for research and planning activities. This amount is the SPR fund. The Code further defines that at least 25% of the SPR funding be used specifically for "research, development, and technology transfer activities" related to transportation. Further, federal regulation mandates that the states certify the proper use of these SPR funds and appropriately manage them. Chapter 23 of the Code of Federal Regulations (CFR), Section 420, requires states to develop, establish, and implement a management process that identifies and implements research, development and technology transfer activities to address priority transportation issues, including the development of an annual work program. The elements of the program must be documented to ensure effective use of the funds. This Annual Report constitutes the required annual work program. Appendix A of this report contains the required Certification of Compliance and an FHWA approval letter.

For fiscal year 2008, the SPR program will provide approximately $1.232 million new dollars for research efforts at UDOT. This allocation is the largest single piece of funding used by the Research Division. Because of the cash flow of some long-term projects, and delays in other projects, some of the FY 2007 SPR allocation is also available for use during FY 2008. Federal SPR funds are matched 80/20 with state funds.

Special Federal

In addition to the SPR allocation, other federal funds available for research efforts at UDOT during fiscal year 2008 include Innovative Bridge funds, Highways for Life funds, remaining funds from the I-15 National Test Bed, and federal funding of the LTAP program.

Innovative Bridge funds are typically awarded each year to individual projects deemed meritorious by the FHWA. Over the past several years, UDOT has been awarded annual amounts on the order of $0.50 million for specific bridge projects where innovations are proposed. Given the long lead time involved in some of these projects, and the delay in funding awards, several of these Innovative Bridge projects are still open and have unspent, but budgeted, funding. Some of this funding will be used in FY 2008, and the remainder will be carried forward to FY 2009. Because these funds pass through the UDOT Structures Division, the Innovative Bridge Funds are not shown in the budget contained in this document.

During the late 1990's, UDOT embarked on an unprecedented reconstruction of the I-15 corridor in Salt Lake County. The $1.4 billion, 16.5-mile urban design-build project was the largest of its kind in the United States, and presented a unique research opportunity. With 142 bridge structures slated for demolition and replacement, UDOT and its research partners developed a research program aimed primarily at the full-scale testing of bridges and foundations. Thirty-one research projects were identified for funding, and $4.7 million was obtained to fund those projects. The largest share of that funding package was a special congressional appropriation, through the TEA-21 funding bill, of $3.8 million, including a 20% state match.

The I-15 National Transportation Test Bed program was executed in four phases. Although the reconstruction project is long since completed, a few of the research projects are still underway, and a portion of the Phase IV allocation is still available to help fund those projects.

The FHWA typically provides annual funding to support the LTAP program. For fiscal year 2008, this amount is $112,500. This amount is matched with an equal amount of state funds. Since these funds are managed on a different fiscal-year basis, the value shown in the budget represents the portion available during this Federal fiscal year. In addition, the LTAP center at Utah State University sought, and was granted, additional funds for a Product Demonstration Showcase program, beginning in fiscal year 2007. These funds pass through the UDOT Research Division and are administered by the Division.

Special Federal Matching Funds

In order to foster transportation research at the nation's universities, and to encourage cooperation between these universities and the state Departments of Transportation, the U.S. Department of Transportation has instituted a University Transportation Centers (UTC) program, administered by the Research and Innovative Technology Administration (RITA). With funding and direction from the newest federal transportation funding bill, "2005 Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users" (SAFETEA-LU), the Mountain Plains Consortium (MPC) regional UTC has received renewed funding, and Utah State University has been designated as a Tier II UTC. The MPC UTC is a consortium of 10 universities, centered at North Dakota State University. The Traffic Lab of the University of Utah Civil and Environmental Engineering Department, in Salt Lake City, is a participant in the MPC, and receives funding to be used as matching money on research projects. The new Tier II UTC at Utah State University, in Logan, Utah, also receives money to be used as matching funds for transportation research projects. The UDOT Research Division is a beneficiary of both of these UTC matching fund programs in fiscal year 2008.

State

UDOT provides state funds, from the State Administrative and State Construction budgets to help support research efforts. State funding comprises the second largest portion of the Research Division revenue budget. State Construction funds are typically used to match federal funds in the research program. State Administrative funds are typically allocated directly to research projects.

Pooled Fund

Projects are sometimes initiated as a joint effort by the FHWA and several states. The entities pool their resources to pursue research efforts of common interest. This Pooled Fund program is administered by the FHWA. Each agency who commits to a given project contributes a portion of the funding for that project, from their SPR or other funding sources. In cases where UDOT is the state leading a given research project, funds from the other participating states may show up as revenue to the project, depending on how the funds for that specific project are administered and spent.

section

3

Projects & Studies

New Projects
Existing Projects
Transportation Pool Fund Studies
Experimental Feature Projects

PROJECTS & STUDIES

A broad variety of research projects are slated for initiation, or are underway, at the beginning of fiscal year 2008. A number of projects have also been completed during the course of fiscal year 2007. The descriptions and summaries of new projects, continuing projects, and pooled fund projects are given later in this section.

At the beginning of fiscal year 2008, the Research Division is managing eighty nine research projects, including one specifically-funded experimental feature project, with a total project budget of $5.607 million. This stated budget includes direct contract cost and overhead administration cost for the entire duration of each project, not just fiscal year 2008. Table 1, below, summarizes the number of projects, and amount of total funding, in each of twelve discipline areas at UDOT. Figures 1 and 2 present this program balance in graphical form.

Table 1: Research Program Balance

Discipline Area	Projects	% Program	Funding	% Funding
ADMINISTRATIVE	1	1.1%	57,200	1.0%
CONSTRUCTION	5	5.6%	255,200	4.6%
ENGINEERING SERVICES	1	1.1%	65,000	1.2%
ENVIRONMENTAL	4	4.5%	419,001	7.5%
GEOTECHNICAL	11	12.4%	913,074	16.3%
HYDRAULICS	5	5.6%	437,118	7.8%
MAINTENANCE	10	11.2%	365,000	6.5%
MATERIALS	12	13.5%	613,925	10.9%
PLANNING & PROGRAMMING	9	10.1%	419,261	7.5%
STRUCTURES	16	18.0%	1,112,710	19.8%
TECHNOLOGY TRANSFER	1	1.1%	75,000	1.3%
TRAFFIC OPS & SAFETY	14	15.7%	874,320	15.6%
TOTAL	**89**	**100%**	**$5,606,810**	**100%**

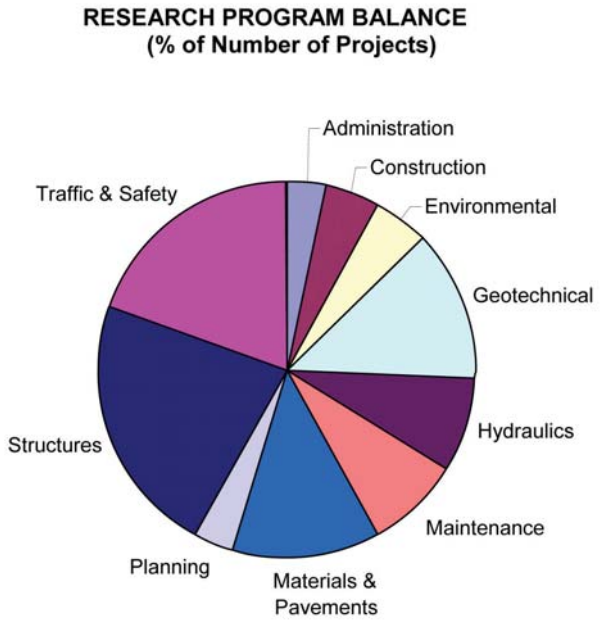


Figure 1 - **Research Program Balance**
Relative proportion of the number of research projects in each discipline area.

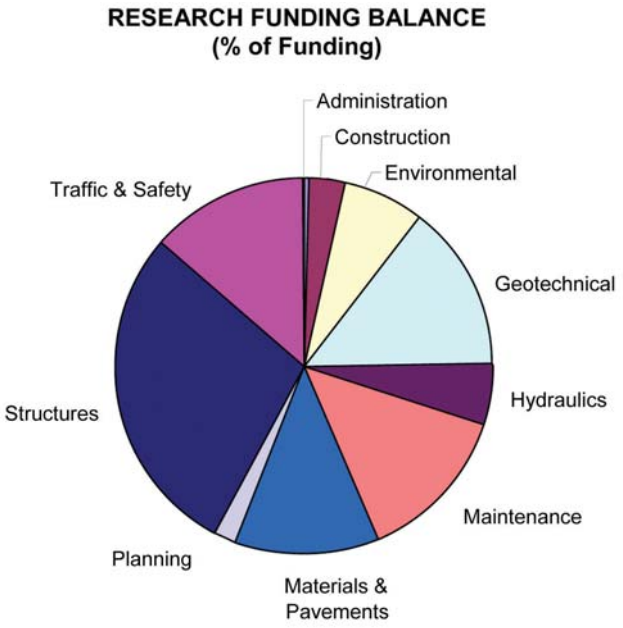


Figure 2 - **Research Funding Balance**
Relative proportion of research project funding in each discipline area.

New Projects

The 20 projects selected from the UTRAC Workshop prioritization lists for funding, plus four projects specified for funding by UDOT's senior leaders, constitute the new projects to be funded during fiscal year 2008. Eleven of these projects were deemed to be time sensitive, and were added to the FY2007 Federal Work Program by amendment, so they could be initiated in the summer of 2007. They are, nonetheless, shown here in the "new projects" list.

Each of these "new projects" is summarized below, organized by discipline area. For each project, the Project Identification Code (PIC), title, description, status and funding source is shown, along with key information about the project duration and management. A full description of the research objectives for each project can be found on the original Problem Statement in the 2007 UTRAC Workshop Proceedings.

CONSTRUCTION

Evaluation of the Effect of Variable Advisory Speed Systems on Queue Mitigation in Work zones

Objective	Anticipated Completion	Project Manager	Champion	Investigator	Organization
Evaluation	2009	Leonard	Negus	Saito	BYU

Description

Evaluate two variable speed advisory systems to determine if they are effective in reduction the variance in speed of the vehicles upstream of a work zone.

Status: New - scope being refined

Federally Funded

Project ID Code UT07.101

ENGINEERING SERVICES

Machine Control Guidance

Objective	Anticipated Completion	Project Manager	Champion	Investigator	Organization
Standards	2009	Fazio	Hancock	Horrocks	

Description

Evaluating the various construction machine control guidance systems available, provide assistance in formulating Department guidelines and policies.

Status: New - Contract pending

Federally Funded

Project ID Code UT.07.107

ENVIRONMENTAL

Determining Wildlife Use of Wildlife Crossing Structures Under Different Scenarios

Objective	Anticipated Completion	Project Manager	Champion	Investigator	Organization
Evaluation	2011	Fazio	Stromness	Cramer	USU

Description

This study evaluates the effectiveness of wildlife crossing structures by setting up cameras at location to verify use and passage. Various openings to crossing will be evaluated also.

Status: New - Contract pending

Federally Funded

Project ID Code UT07.401

Tire Noise on I-215 East

Objective	Anticipated Completion	Project Manager	Champion	Investigator	Organization
Evaluation	2009	Wakil	McMinimee	TBD	

Description

Evaluation of tire noise reduction along a section of I-215 after completing a diamond grinding, road-smoothing project to reduce pavement noise. The grinding removed the transverse tinning in the concrete pavement to minimize tire "whine" and created a longitudinal texture. Noise reduction will be measured now that the longitudinal texture has been worn down by traffic since the grinding operations took place.

Status: New - in-house research

State Funded

Project ID Code UT07.402

GEOTECHNICAL

Improved Stability And Consolidation Assessment Of Embankments

Objective	Anticipated Completion	Project Manager	Champion	Investigator	Organization
Evaluation	2009	Leonard	Higbee	Lawton/Bartlett	UofU

Description: Evaluate the methods used (including typical instrumentation schemes) to predict settlements caused by large embankments over very soft soils, and recommend better ways to predict the magnitude and timing of this settlement. Project includes instrumentation of a large embankment on a current construction project, and laboratory testing of the native subsoils.

Status: New - Contract pending

Federally Funded

Project ID Code: UT07.704

Shaking Table Testing of EQ Drains

Objective	Anticipated Completion	Project Manager	Champion	Investigator	Organization
Evaluation	2009	Leonard	Higbee	Rollins	

Description: Evaluate the ability of Earthquake Drains to prevent liquefaction as a function of acceleration and duration. These tests will be done in a large shear box on a shake table, likely at SUNY-Buffalo, in conjunction with some other tests. Compare the settlement of treated sand relative to untreated soil. Evaluate the accuracy of simple models and computer models to predict measured behavior.

Status: New - refining scope and determining availability of testing facility. Pooled Fund Project.

Federally Funded

Project ID Code: UT07.708

HYDRAULICS

Retrofitting Culverts and Fish Passage

Objective	Anticipated Completion	Project Manager	Champion	Investigator	Organization
Evaluation	2009	Fazio	Stuhff	Hotchkiss	BYU

Description: Evaluating various culvert slip-lining rehab methods for their stability for fish passage.

Status: Contract signed

Federally Funded

Project ID Code: UT07.905

MAINTENANCE

In-situ Culvert Rehabilitation/Synthesis Study and Field Evaluation

Objective	Anticipated Completion	Project Manager	Champion	Investigator	Organization
Evaluation	2009	Fazio	Ularich	Tullis	USU

Description: Field evaluation of most common slip lining methods and hydraulic testing of appropriate end treatments.

Status: Contract signed

Federally Funded

Project ID Code: UT07.204

MAINTENANCE

Costs of Winter Maintenance on Asphalt vs. Concrete Pavements-RBS

Objective	Anticipated Completion	Project Manager	Champion	Investigator	Organization
Discovery	2009	Sharp	Thurgood	Sharp	UDOT

Description

Evaluate and compare costs to clear asphalt and concrete pavements to UDOT requirements. There will be three sites of each pavement type.

Status: In-house research. Waiting for the first of three major snow events to evaluate thru 2007/2008 winter

State Funded

Project ID Code UT07.208

Snow Fence Configurations to Allow for Close proximity to Protected Areas

Objective	Anticipated Completion	Project Manager	Champion	Investigator	Organization
Discovery	2009	Berg	Thurgood	Spoonermeyer	WyDOT

Description

Evaluate the effectiveness of various snow fence configurations in situations where limited right-of-way width prevents the fence from being as far away as it should be.

Status: New - Scope being refined

Federally Funded

Project ID Code UT07.210

MATERIALS

Cold Temperatures and Fatigue Quality Control Test for Asphalt Mixes

Objective	Anticipated Completion	Project Manager	Champion	Investigator	Organization
Discovery	2009	Anderson	Biel	Romero	UofU

Description

UDOT is also considering using RAP and other hot-mix additives to enhance pavement life and performance. Binder tests alone are not enough to identify potential hot-mix modification effects. A rapid hot-mix test to control cold temperature characteristics during HMA production is required to resolve this issue. This project will adapt the Superpave binder test to measure creep compliance of hot-mix at cold and intermediate temperatures, develop a repeatable test protocol and determine its precision, develop QC specifications, and develop a test protocol to measure creep compliance at intermediate temperatures.

Status: New - Contract preparation

State Funded

Project ID Code UT07.301

Occurrence Of Water Vapor Flow In Non-Frost-Susceptible Aggregate Base Materials

Objective	Anticipated Completion	Project Manager	Champion	Investigator	Organization
Discovery	2009	Hsiao	Biel	Guthrie	BYU

Description

The Research findings will enable engineers to assess the susceptibility of base/subbase material to thaw weakening due to water vapor flow and assist them in determining whether or not a soil/aggregate stabilizer may be warranted.

Status: New - Contract pending

Federally Funded

Project ID Code UT07.305

Optimization of Mixture Designs using Ternary Blends of Cementitious Materials

Objective	Anticipated Completion	Project Manager	Champion	Investigator	Organization
Discovery	2009	Fazio	Biel	Tikalski	UofU

Description

Transportation Pool Fund study lead by Iowa Department of Transportation and Iowa State University, studying cement mixes with other cementitious materials. (see also TPF-5(117) in the Pooled Fund list.

Status: In-progress

Federally Funded

Project ID Code UT07.306

Flexible Pavement - Structural Condition Index

Objective	Anticipated Completion	Project Manager	Champion	Investigator	Organization
Evaluation	2009	Anderson	Kuhl	Guthrie	BYU

Description

Develop a structural index for flexible pavement, based on FWD data that can be used for reporting the system condition - and more importantly, that can be used to discriminate between pavements requiring additional structural capacity and those for which a surface treatment would be sufficient. Current pavement condition reporting & modeling is primarily based on surface condition data. Structural capacity is a significant data element needed to capture the complete level of condition.

Status: New - Contract pending

Federally Funded

Project ID Code UT07.304

Evaluating The Level of Accuracy of Truck Traffic Data on State Highways

Objective	Anticipated Completion	Project Manager	Champion	Investigator	Organization
Evaluation	2009	Anderson	Lawrence & Kuhl	Saito	BYU

Description

An analysis will be done to determine the accuracy of current truck traffic data. Recommendation will be made to improve the program.

Status: New - Contract pending

Federally Funded

Project ID Code UT07.501

Economics and Project Prioritization

Objective	Anticipated Completion	Project Manager	Champion	Investigator	Organization
Policy	2009	Lindsey	Boshert	Schultz	BYU

Description

Refine and document the process of considering economic impacts, such as job creation, in the prioritization process of new projects.

Status: New - Contract pending

Federally Funded

Project ID Code UT07.504

PLANING & PROGRAMMING

Retention of Core Competencies

Objective	Anticipated Completion	Project Manager	Champion	Investigator	Organization
Policy	2008	Fazio	Doehring	TBD	

Description

Analyze department needs for retaining core competencies. Provide recommendation for retaining level of knowledge needed to be a competent owner rep.

Status: New - Seeking for investigator

State Funded

Project ID Code UT07.509

STRUCTURES

Accelerated Bridge Construction And Prefabricated Decks

Objective	Anticipated Completion	Project Manager	Champion	Investigator	Organization
DiscoveryStandard	6/2009	Hsiao	Miller/Wheeler	Barr/Boyle	USU

Description

Making the precast deck composite and connecting the panels meets UDOT requirements. Establish standard design methods and details for placing precast deck on existing bridges. Establish design guidelines for new bridges to facilitate deck replacement with precast deck panels.

Status: New - Contract pending

Federally Funded

Project ID Code UT07.801

Design Methodology For Repair Of Prestressed Concrete Girder Ends With FRP Composites

Objective	Anticipated Completion	Project Manager	Champion	Investigator	Organization
Standard	12/2008	Hsiao	Miller/Wheeler/Eixenberger	Pontelides	BYU

Description

Provide one of the new FRP bean end repair methods. The research will produce the examples for new designer to follow. Training will also be provided to designing unit.

Status: New - Contract pending

Federally Funded

Project ID Code UT07.805

The Synthesis Of Design Guidelines For Corrosion Resistant Reinforced Concrete

Objective	Anticipated Completion	Project Manager	Champion	Investigator	Organization
Standard	12/2008	Hsiao	Miller/Wheeler	Reaveley	UofU

Description

This research will develop the High performance Concrete (HPC) corrosion guidelines for future concrete design development.

Status: New - Contract pending

Federally Funded

Project ID Code UT07.806

Isolation Bearings

Objective	Anticipated Completion	Project Manager	Champion	Investigator	Organization
Standard Discovery	12/2009	Hsiao	Miller/Wheeler	Ryan / Boyle	USU

Description

This research will investigate the isolation bearings. Based on the findings, Investigators will come up with recommendation for future UDOT bearing design.

Status: New - Contract Pending

State Funded

Project ID Code UT07.809

TRAFFIC OPERATIONS AND SAFETY

Crashes In The Vicinity Of Major Crossroads

Objective	Anticipated Completion	Project Manager	Champion	Investigator	Organization
Evaluation	2009	Anderson	Kaczorowski/ Boshert	Schultz	BYU

Description

Review crash data to determine which major intersections are experiencing a high number of accidents. Crash types, severity, and contributing circumstances will be analyzed to aid in making recommendations for improving safety at these locations.

Status: New - Contract pending

Federally Funded

Project ID Code UT07.601

Development of a Decision Support Tool for Assessing Vulnerability of Transportation Networks

Objective	Anticipated Completion	Project Manager	Champion	Investigator	Organization
Evaluation	2009	Anderson	Peterson	Chen	USU

Description

Analyze the vulnerability of key Utah highways to determine the most critical choke points. Develop methodology and software to allow good decision-making related to these locations.

Status: New study - Contract pending

Federally Funded

Project ID Code UT07.604

Evaluation of Optimal Traffic Monitoring Station Spacing on Freeways

Objective	Anticipated Completion	Project Manager	Champion	Investigator	Organization
Evaluation	2009	Fazio	Kinnecom	Martin	UofU

Description

Evaluate the optimal spacing of traffic monitoring stations along the interstate, specifically the trade-off between the current half-mile spacing and the accuracy of speed, travel time and data reliability for longer spacings.

Status: New - Contract pending

Federally Funded

Project ID Code UT07.605

Existing Projects

During FY2007, there were 69 research projects underway. Of these 69 projects, 19 have been completed during the year, and 50 will continue into FY2008. These continuing projects include projects with multi-year scopes of work and shorter term projects that did not get initiated at the beginning of the previous fiscal year. The projects are listed by discipline area, and sorted by Project Identification Code within the discipline area. Among other project information, each project is designated as being funded by federal, state, or I-15 Test Bed (special federal) funding. A brief description and status is also given.

ADMINISTRATIVE

Determination Of Crash Costs For Use In Benefit/Cost Analysis (Value Of Life)

Objective	Anticipated Completion	Project Manager	Champion	Investigator	Organization
Evaluation	2007	Anderson	Clayton	Perrin	

Description: This completed study recommended crash costs by severity. Two tables are available for use. 1- FHWA costs based on national averages- use where significant numbers of crashes have occurred such as system analysis. 2- Utah table using averages more statistically valid for general use on corridors and short sections.

Status: Complete - Final Report published | State Funded | Project ID Code AM06.003

Older Driver Study: Evaluation Of Safety Effects Of Pavement Markings And Signage

Objective	Anticipated Completion	Project Manager	Champion	Investigator	Organization
Evaluation	N/A	Lindsey		Saito	BYU

Description: Evaluation of the ability of older drivers to read pavement markings and signs with varied lettering sizes.

Status: Project Cancelled | State Funded | Project ID Code AM06.005

Pavement Markings Study (Test Sections)

Objective	Anticipated Completion	Project Manager	Champion	Investigator	Organization
Standards	2007	Lindsey		In-House	

Description

Develop Guidelines for UDOT Regions for effective placement of pavement markings.

Status: Project Completed

State Funded

Project ID Code AM06.006

Freeways To Fuel: A Novel Approach To Biofuels Production

Objective	Est. Completion	Project Manager	Champion	Investigator	Organization
Renewable Energy Source	4/2008	Wakil	Lindsey	Whitesides	USU

Description

The Utah Department of Transportation (UDOT) has partnered with Utah State University (USU) for this green experiment to research the possibility of growing biodiesel producing, drought-tolerant crops such as canola, safflower and perennial flax adjacent to the state highways.

Status: In-Progress

Federally Funded

Project ID Code AM07.001

CONSTRUCTION

Evaluate Work Zone Traveler Information Systems

Objective	Anticipated Completion	Project Manager	Champion	Investigator	Organization
Evaluation	2007	Leonard	Negus	Saito	BYU

Description

Evaluate devices which detect traffic queues and then alert drivers about the length of delay, to determine if they are effective in causing drivers to alter routes and thus, minimize queues. After initial tests were not satisfactorily conclusive, the research team expanded into identifying other measures to mitigate queues.

Status: Nearing completion, preparing final report

State Funded

Project ID Code AM03.001

Evaluating Design-Build Contracting Methods for STIP project 2005-2007

Objective	Anticipated Completion	Project Manager	Champion	Investigator	Organization
Evaluation	2010	Anderson	Stewart	Martin	UofU

Description

This analysis utilized the traffic model developed during the analysis of the I-15 Reconstruction Project to estimate the user impacts of innovative contracting methods on six STIP projects in the Salt Lake area. It demonstrated that most innovative contracting methods have a positive effect on traffic delay.

Status: Complete - Final Report published

Federally Funded

Project ID Code AM05.002

CONSTRUCTION

Mitigate Queue Lengths In Work Zone Traffic Control

Objective	Anticipated Completion	Project Manager	Champion	Investigator	Organization
Evaluation	2007	Leonard	Negus	Saito	BYU

Description

Identify and evaluate tools and techniques to mitigate queues in work zones, and evaluate their potential for use on UDOT projects.

Status: Nearing completion, preparing final report

State Funded

Project ID Code UT05.101

Work Zone Traffic Control Measures & Crash Occurrence

Objective	Anticipated Completion	Project Manager	Champion	Investigator	Organization
Evaluation	2007	Anderson	Clayton	Saito	BYU

Description

The safety impact of construction zones were analyzed. Recommendations related to our traffic control plans in these areas were submitted

Status: Complete - Final Report published

Federally Funded

Project ID Code UT05.102

Quality And Safety During Nighttime Construction Activities

Objective	Anticipated Completion	Project Manager	Champion	Investigator	Organization
Evaluation	2008	Hsiao	Wight	TBD	

Description

Determine the implications to quality, productivity, and safety of night-time construction work, and develop guidelines to determine when it is appropriate to perform construction activities at night.

Status: On hold for potential nationwide study

State Funded

Project ID Code UT06.102

GIS Project Tracking Website

Objective	Anticipated Completion	Project Manager	Champion	Investigator	Organization
Information	2008	Berg	Rock	In-House	

Description

Develop a GIS-enabled website to display all pre-construction and construction projects, allowing users to query based on various criteria.

Status: In Progress

State Funded

Project ID Code UT06.103

ENGINEERING SERVICES

On-Line Assessment of Creative Highway Administration Techniques

Objective	Anticipated Completion	Project Manager	Champion	Investigator	Organization
Evaluation	2007	Anderson	Stewart	Martin	UofU

Description

This contract funded upgrades in the traffic models in urban areas in Utah. New software was uploaded, and new models (including traffic data) were developed for the Provo and Ogden areas.

Status: Completed - Final Report published

Federally Funded

Project ID Code MPC06.001

ENVIRONMENTAL

Design and Development of a Context Sensitive Visual Resource Assessment

Objective	Anticipated Completion	Project Manager	Champion	Investigator	Organization
Standards	Fall 2008	Fazio	Johnson	Ellsworth	USU

Description

Develop a manual for visual context sensitive design for highway improvements in Utah. This research will provide a guide on how to design highway improvements that are usually sensitive.

Status: Research in progress. Received first progress report

Federally Funded

Project ID Code UT05.401

Development of a Habitat Quality Index

Objective	Anticipated Completion	Project Manager	Champion	Investigator	Organization
Standards	Fall 08	Fazio	West	Twedt	Bio-West

Description

Develop guidelines for assessing impacts to wildlife habitats using an index.

Status: Research in progress. Received first progress report

Federally Funded

Project ID Code UT06.404

GEOTECHNICAL

Load Rate Effect On Axial & Lateral Pile Capacity

Objective	Anticipated Completion	Project Manager	Champion	Investigator	Organization
Evaluation	2007	Leonard	Bischoff	Rollins	BYU

Description

Evaluate the effects of rapid loading techniques (Statnamic and CAPWAP) on the response of pile foundations in fine-grained soils. Calibrate and evaluate these non-destructive test methods. Also, evaluate the load response of an IsoTruss reinforced concrete pile.

Status: Completed - final report being reviewed

Test Bed

Project ID Code TB01.401

GEOTECHNICAL

Consol & Drain Prop Soft Soil

Objective	Anticipated Completion	Project Manager	Champion	Investigator	Organization
Material Properties	2007	Berg	Brown	Bartlett and Lawton	UofU

Description: Develop a well-characterized set of geotechnical test data along the I-15 corridor in Salt Lake County. Using this data, evaluate the effectiveness of in-situ techniques in estimating the compressibility and drainage properties of the soft Lake Bonneville sediments. Make recommendations on appropriate sampling and testing procedures.

Status: Completed - final report being reviewed

Test Bed

Project ID Code TB01.407

I-15 Testbed Phase 4, Prog. Dev.

Objective	Anticipated Completion	Project Manager	Champion	Investigator	Organization
Management	2008	Leonard	Research	N/A	

Description: Manage and document the progress of projects initiated as part of the I-15 National Test Bed for Advanced Transportation Research.

Status: In-progress

Test Bed

Project ID Code TB01.410

Long Term Monitoring of I-15 Embankment

Objective	Anticipated Completion	Project Manager	Champion	Investigator	Organization
Monitoring	2010	Leonard	Bischoff	Bartlett	UofU

Description: A 10-year study of the performance of innovative foundation treatments and embankment construction, including expanded polystyrene (Geofoam) fill, wick drains, lime cement columns, and MSE walls. Embankments were instrumented in several locations, and the readings evaluated to determine whether performance matches predicted performance.

Status: In-progress

Test Bed

Project ID Code TB98.029a

Geophysical Methods to Prioritize Mitigation Options for SR-9 at Coal Hill Landslide

Objective	Anticipated Completion	Project Manager	Champion	Investigator	Organization
Evaluation	2008	Leonard	Heppler	Ashland	UGS

Description: A slow moving landslide is damaging SR-9. The research evaluates geophysics techniques to characterize the landslide, and explores options to mitigate the landslide damage to the highway. Initial research was completed, but identified the need for continued monitoring to establish better rates of movement.

Status: In-progress, received initial report and recommendations

Federally Funded

Project ID Code UT05.706

Improved Performance Of MSE Walls

Objective	Anticipated Completion	Project Manager	Champion	Investigator	Organization
Evaluation	2008	Leonard	Bischoff	Gerber	BYU

Description

Contribute to the MSE Wall Inspection and Risk Assessment project listed above, and perform detailed analysis of an MSE wall to determine the impact of wall deformation on pavements above the wall.

Status: In-progress

Federally Funded

Project ID Code UT06.705

Stone Column Treatment With Wick Drains In Silty Sands

Objective	Anticipated Completion	Project Manager	Champion	Investigator	Organization
Evaluation	2008	Leonard	Higbee	Rollins	BYU

Description

Assess the effectiveness of using wick drains in conjunction with the installation of stone columns to enhance the densification of surrounding silty sands. Field installations are being monitored on the on-going I-15 NOW project in Ogden, Utah.

Status: In-progress

Federally Funded

Project ID Code UT06.706

Development Of MSE Wall Inspection Plan Based On Failure Mode Analysis And Risk Assessment

Objective	Anticipated Completion	Project Manager	Champion	Investigator	Organization
Standard	2008	Leonard	Bischoff	Bay	USU

Description

Develop an inventory of existing mechanically stabilized earth (MSE) walls, review their condition,, consider the potential failure mechanisms of these walls, and assess the level of risk associated with each failure mechanism. Recommendations will be given on how to better inspect the walls to detect impending failures and how to mitigate the risks of failure.

Status: In-progress

Federally Funded

Project ID Code UT06.710

Down-drag of Piles

Objective	Anticipated Completion	Project Manager	Champion	Investigator	Organization
Evaluation	Dec 2007	Leonard	Bischoff	Rollins	BYU

Description

Piles in embankments over soft soils were instrumented to determine the magnitude of forces imposed on the piles from settlement. The intent of the study is to determine whether these down-drag forces are significant enough to warrant including them in the pile design calculations.

Status: Nearing completion, preparing final report

Federally Funded

Project ID Code UT98.504

HYDRAULICS

Bridge Scour Counter Measures Phase 1

Objective	Anticipated Completion	Project Manager	Champion	Investigator	Organization
Evaluation Standards	2007	Hsiao	Stuhff	Zundel	BYU

Description

Verification of Rosgen Scour mitigation method via surface modeling software using numerical methodology.

Status: Complete - Phase I

Federally Funded

Project ID Code UT00.305

Bridge Scour Counter Measures Phase 2

Objective	Anticipated Completion	Project Manager	Champion	Investigator	Organization
Evaluation Standards	2008	Hsiao	Hydraulics	Zundel	BYU

Description

Study in-stream low flow structures for scour countermeasure, prepare manual or standards.

Status: Nearing completion - Final Report Pending

Federally Funded

Project ID Code UT05.402

Water Resources Investigation - Phase I

Objective	Anticipated Completion	Project Manager	Champion	Investigator	Organization
Evaluation	2007	Fazio	STUHF	USGS	

Description

Development of an interactive website for stream flow statistics in Utah, and refining of current regression equations. First of three project phases. (see UT06.902 - "On-line peak flow statistics" for second phase.

Status: Complete

State Funded

Project ID Code UT05.4X1

Fish Passage at Utah

Objective	Anticipated Completion	Project Manager	Champion	Investigator	Organization
Fish Passage at Utah	2009	Fazio	Stuhff	Hotchkiss	BYU

Description

Evaluating current fish passage practice at UDOT. Identify and map UDOT fish passage culverts. Randomly select and inspect some fish passage culverts. Set up database collection system. Develop a fish passage design manual. Train designer.

Status: In-progress - Developing database

Federally Funded

Project ID Code UT06.901

On-Line Peak Flow Statistics database Phase 2

Objective	Anticipated Completion	Project Manager	Champion	Investigator	Organization
Design Data	2009	Fazio	Stuhff	USGS	

Description

The USGS is developing an interactive website to get stream flow statistics in Utah. They are also refining the current regression equations. (For phase I see UT05.4X1)

Status: Web-application beta version on line

Federally Funded

Project ID Code UT06.902

MAINTENANCE

Targeted & Adaptive Simulator Training For Winter Maintenance

Objective	Anticipated Completion	Project Manager	Champion	Investigator	Organization
Training	2007	Lindsey	Burns	Strayer	

Description

Develop a training program for snow plow operations using a truck simulator.

Status: Complete

State Funded

Project ID Code AM06.004

Asset Management System, Implement Maintenance Features (Good Roads Cost Less)

Objective	Anticipated Completion	Project Manager	Champion	Investigator
Pavement Performance	December 2006	Wakil	Kuhl/Schvaneveldt/Anderson	Zavitski

Description

The original study published in 1977 used an economic analysis to recommend the condition level that should be attained, for the highway system, in order to optimize the benefits and costs, including costs to the users. Various pavement rehabilitation strategies were considered and the associated benefits and costs and level of acceptable performance reduced to an annual basis for each strategy. This study revisited the original analysis and updated it for current user costs, pavement life, and pavement treatment life, and recommended appropriate goals and measures to optimize funding and maximize pavement performance & user benefits.

Status: Completed

State Funded

Project ID Code UT05.510

Install Avalanche Monitoring System

Objective	Est. Completion	Project Manager	Champion	Investigator
Evaluation of the Monitoring System	TBD	Wakil	Lindsey	Inter-Mountain Labs, Inc.

Description

Evaluate the performance of a sophisticated infrasound monitoring system and a central command unit that alerts users of slides in the area of Little Cottonwood Canyon that is deemed the most dangerous. This highway is the only link to two significant ski areas. Improved avalanche forecasting is the key to safe travel and avoiding prolonged and costly road closures. The monitoring system and its installation has been funded by the UDOT Region 2.

Status: In-progress - Progress based on winter snowfall

Federally Funded

Project ID Code UT06.201

MAINTENANCE

Evaluation Of Overlay Rutting Susceptibility (9 Mm Asphalt Vs. 12.5mm Asphalt)

Objective	Anticipated Completion	Project Manager	Champion	Investigator	Organization
Evaluation	2008	Sharp	Thurgood	Guthrie	BYU

Description

Determine whether 9mm asphalt overlays perform better (less rutting and shoving) than 12.5 mm asphalt overlays.

Status: In-progress

Federally Funded

Project ID Code UT06.206

MATERIALS

Smart PDA- Implementation Van Software

Objective	Anticipated Completion	Project Manager	Champion	Investigator	Organization
Implementation	2007	Anderson	Kuhl	Cheng	USU

Description

Implement specialized software into a mobile van to process images of pavement surfaces gathered while the van is moving to determine pavement condition.

Status: In-progress

State Funded

Project ID Code UT02.403A

Utah LTPP Monitoring

Objective	Anticipated Completion	Project Manager	Champion	Investigator	Organization
Evaluation	2008	Anderson	Biel	Romero	UofU

Description

The scope intended to analyze rutting performance of pavements built with the Superpave system. When no sections were found to exhibit early failure (rutting), the scope of the project was changed to determine the critical temperature for use in Hamburg Wheel Tracking Device tests.

Status: In progress

Federally Funded

Project ID Code UT03.201

Materials Characterization For The AASHTO 2002 Pavement Design Guide

Objective	Anticipated Completion	Project Manager	Champion	Investigator	Organization
Material Properties	2009	Anderson	Biel	Darter	

Description

This is the second phase of the Research contribution to the implementation of the new M-E Pavement Design Guide in Utah. Software use, lab testing procedures, traffic data input, and changes in design policy are needed. Deliverables include a User's Guide, and a Materials Library for use by UDOT pavement designers.

Status: On-going

Federally Funded

Project ID Code UT03.203

Asphalt Binder Uniformity

Objective	Anticipated Completion	Project Manager	Champion	Investigator	Organization
Material Properties	2007	Anderson	Biel	Dongree	

Description

Changes in UDOT specs were recommended to establish limits on variation in rheological properties between asphalt binder supplied during paving and asphalt binder used during mix design.

Status: Final Report being reviewed

Federally Funded

Project ID Code UT05.301

Full-Depth Recycling & Stabilization Of Pavement Base Layers

Objective	Anticipated Completion	Project Manager	Champion	Investigator	Organization
Evaluation	2007	Anderson	Biel	Guthrie	BYU

Description

Specifications were recommended regarding construction methods, quality control, variability, and early trafficking and curing issues for full-depth recycling. The final report recommended procedures for designing recycled layers.

Status: Complete

Federally Funded

Project ID Code UT05.304

Validate Hamburgh Wheel Tracker Using Field Tested Superpave Mixes

Objective	Anticipated Completion	Project Manager	Champion	Investigator	Organization
Validation	Dec 2008	Anderson	VanFrank	Romero	UofU

Description

This project will compare the lab results for Hamburgh Wheel testing with the field performance of Superpave mixes. The scope of this project was included in a modification to project UT03.201. See that project for updated status.

Status: In-progress

Federally Funded

Project ID Code UT06.306

Assessment Of Mud Balance Test For Quality Assurance In Ground Anchor Installation

Objective	Anticipated Completion	Project Manager	Champion	Investigator	Organization
Evaluate	2007	Leonard	Golden	Farnsworth	UDOT

Description

Evaluate the effectiveness of a mud balance test for quality assurance of grout used in soil nail applications. Test data is being gathered from soil nail installation on the Provo Canyon project.

Status: Completed - final report being edited

State Funded

Project ID Code UT06.703

PLANING & PROGRAMMING

Web-Based Pavement Condition & Traffic Data

Objective	Anticipated Completion	Project Manager	Champion	Investigator	Organization
Development	July 2008	Anderson	Regions	Perrett	

Description: The UDOT Data Almanac will be upgraded to include pavement condition and AADTdata. This will allow decision-makers to loosely integrate crash data, pavement condition, and traffic volumes for locations around the state. The information can be statistically analyzed, posted to a map, queried for trends, queried for deficiencies, and upload data for performance measures.

Status: On-going | Federally Funded | Project ID Code AM03.002

Extract Vehicle Classification From TOC Video

Objective	Anticipated Completion	Project Manager	Champion	Investigator	Organization
Evaluation	Dec 2008	Anderson	Kuhl	Cheng	USU

Description: Software has been developed to utilize machine vision and image processing to gather vehicle class data using TOC cameras. The accuracy is being improved through enhanced algorithms. This system will be more efficient and safer than existing methods.

Status: In-progress | Federally Funded | Project ID Code AM03.004

Assessing The Safety Impacts Of Access Management Techniques

Objective	Anticipated Completion	Project Manager	Champion	Investigator	Organization
Evaluation	2007	Anderson	Boschert	Schultz	BYU

Description: The before and after crash history was analyzed on corridors where access management techniques were implemented. The accident rate was not lower, but the severity of the crashes was reduced significantly. A decision tree was produced to estimate if access management methods should be employed.

Status: Completed | State Funded | Project ID Code AM05.003

Skid Index Trigger Values

Objective	Anticipated Completion	Project Manager	Champion	Investigator	Organization
Standard	2008	Anderson	Scovil	Anderson	UDOT

Description: This in-house project will develop a policy and procedure for addressing pavement sections with low skid numbers. Skid reports will be prepared and sent to the region staff for decision-making and correction of the problem.

Status: Deliverables under review | State Funded | Project ID Code UT05.206

Asset Improvement Tracking - (Construction History)

Objective	Anticipated Completion	Project Manager	Champion	Investigator	Organization
info Transfer	2008	Anderson	Kuhl	In-House	

Description

Better methods are needed to track all of the various hard surface improvements made to each pavement section. This information is needed by pavement designers and experts planning maintenance activities.

Status: In-progress | State Funded | Project ID Code UT06.302

Seismic Vulnerability And Emergency Response Of UDOT Lifelines

Objective	Anticipated Completion	Project Manager	Champion	Investigator	Organization
Assessment	2009	Leonard	Steinvorth	Bartlett	UofU

Description

An assessment of the importance (i.e., criticality) and seismic vulnerability of the transportation network and an evaluation of the disruption to the traffic network caused by damage to the transportation infrastructure.

Status: In-progress | Federally Funded | Project ID Code UT06.506

Preventive Deck Joint & Surface Treatment Strategy

Objective	Anticipated Completion	Project Manager	Champion	Investigator	Organization
Discovery	12/ 2008	Hsiao	Eixenburger	Guthrie	BYU

Description

The purpose of this research is to quantify the sensitivity of half-cell potential measurements to variability in factors that may differ more widely statewide. The value of this project is especially paramount as UDOT begins implementation of half-cell potential testing across the entire bridge network.

Status: In-progress | Federally Funded | Project ID Code AM04.001

Various Scanning Tours

Objective	Anticipated Completion	Project Manager	Champion	Investigator	Organization
Discovery	9/2008	Hsiao	Varies	Varies	

Description

Provide various scanning tours to different champions on specific needs. Transfer the learned technology to UDOT and share lessons learned experience.

Status: In-progress | Federally Funded | Project ID Code AM07.002

STRUCTURES

Rapid Bridge Replacement - 4500 S Showcase

Objective	Anticipated Completion	Project Manager	Champion	Investigator	Organization
Discovery/Standard	12/2008	Hsiao	McMinimee	McGuillen	URS

Description: Provide lessons learned to UDOT Project Managers and bridge designers from consultants and in house.

Status: In-progress | **Federally Funded** | Project ID Code AM07.003

Bridge Visualization Showcase

Objective	Anticipated Completion	Project Manager	Champion	Investigator	Organization
Discovery	6/2008	Hsiao	McMinimee	Intellisum	

Description: Provide LD3 laser guided survey technology to UDOT roadway design teams, including the accelerated bridge project at 4500 South.

Status: In-progress | **Federally Funded** | Project ID Code AM07.004

Studies On Corrosion Of Steel Reinforcement In Concrete Bridge Decks

Objective	Anticipated Completion	Project Manager	Champion	Investigator	Organization
Evaluation	10/2008	Hsiao	Eixenberger	Guthrie	BYU

Description: Determine the proper timing of replacement of surface treatments on concrete bridge decks with and without SIPMFs, and determine the sensitivity of half-cell potential measurements to cover depth, epoxy coating on rebar, defects in the epoxy coating, chloride concentration, and deck temperature

Status: In-progress | **Federally Funded** | Project ID Code AM07.005

Dynamic Characteristics Of New Bridges I-15 Test Bed Ph 3

Objective	Anticipated Completion	Project Manager	Champion	Investigator	Organization
Evaluation	2007	Leonard	Wheeler	Halling	USU

Description: Evaluate the dynamic characteristics of three new bridges by placing sensors on the structure and exciting the structure with a forced vibration. Compare the design models with the actual field data to see if the bridges behave as modeled. Part of an on-going process to improve modeling techniques and develop non-destructive methods for bridge assessment.

Status: Completed - final report being reviewed | **State Funded** | Project ID Code TB00.302

Strong Motion Instrumentation Of Bridge Site-I-80,SR-201 Seismic Instrumentation

Objective	Anticipated Completion	Project Manager	Champion	Investigator	Organization
Evaluation	2007	Leonard	Wheeler	Porcella	USGS

Description

Maintenance contract to periodically test and maintain strong motion equipment previously placed on a bridge at the I-15, I-80, SR-201 interchange

Status: Completed

State Funded

Project ID Code TB00.305

Non-Destructive Evaluation Method To Determine Residual Stress In Girders

Objective	Anticipated Completion	Project Manager	Champion	Investigator	Organization
Evaluation	2008	Leonard	Wheeler	Barr	USU

Description

Investigate the feasibility of non-destructively determining the residual force in tendons of pre-stressed girders by isolating, but not removing, a small block on the tensile face of the girder.

Status: In-progress, received interim progress reports

Federally Funded

Project ID Code TB01.404

Structural Health Monitoring Of I-15 Structures

Objective	Anticipated Completion	Project Manager	Champion	Investigator	Organization
Evaluation	2007	Leonard	Wheeler	Halling	USU

Description

Enhance the existing seismic instrumentation on the C-846 bridge at the intersection of I-15 and SR-201, and develop a web-based interface to monitor the output of the instrumentation.

Status: In Progress - preparing final report

Federally Funded

Project ID Code TB01.405

Monitoring Spliced Girders, Deck Panel Joints & FRP Retrofit

Objective	Anticipated Completion	Project Manager	Champion	Investigator	Organization
Evaluation	2006	Hsiao	Wheeler	Pantelides	UofU

Description

Revise the design of deck panels and associated details, and develop reduction factors for design using FRP.

Status: Complete

Federally Funded

Project ID Code UT03.503

STRUCTURAL

Programming Of Strong Ground Motion Instrumentation Of New Bridges

Objective	Anticipated Completion	Project Manager	Champion	Investigator	Organization
Standard	2009	Leonard	Higbee	Halling	USU

Description

Develop a set of standard plans for installing strong ground motion instrumentation on significant bridges, and identify a plan for identifying the appropriate bridges.

Status: In-progress

Federally Funded

Project ID Code UT05.702

Investigation Of Improvement Of Deck Concrete Mix Design & Curing Practices

Objective	Anticipated Completion	Project Manager	Champion	Investigator	Organization
Standard	June, 2008	Hsiao	Miller/Wheeler	Barr	USU

Description

New structural concrete mix design to reduce the number of deck cracking incidents in newly constructed bridges within the state of Utah. Obtaining this objective will involve a literature review of previous research, documenting the curing practices and performing material tests of four representative bridges with the state of Utah, and improving upon the deck concrete misdesign and current curing practices for future bridge cracks.

Status: In-progress

Federally Funded

Project ID Code UT05.801

Evaluation Of Bridges For Seismic Retrofit

Objective	Anticipated Completion	Project Manager	Champion	Investigator	Organization
tandard	12/31/08	Hsiao	Miller/Wheeler	Ryan	USU

Description

Develop general guidelines for preliminary screening of bridges to identify the most vulnerable bridges on which to focus detailed evaluation efforts.

Status: In-progress

Federally Funded

Project ID Code UT06.801

Calibration Of AASHTO's New Prestress Loss Design Equations

Objective	Anticipated Completion	Project Manager	Champion	Investigator	Organization
Discovery	12/31/08	Hsiao	Miller/Wheeler	Barr	USU

Description

To determine the appropriate design parameters that should be used in order to more accurately account for the pre-stress losses in precast, prestressed concrete bridges built within the State of Utah. This research will be accom-plished in two fold: 1. obtain design parameters elastic modulus shrinkage and creep for typical Utah concrete girders mixes and 2. quantify the effects of deck casting and differential shrinkage on prestress gains to be used in the new procedures.

Status: In-progress

Federally Funded

Project ID Code UT06.802

TRAFFIC OPERATIONS AND SAFETY

Slippery Pavement Safety Analysis -Data Mining Program

Objective	Anticipated Completion	Project Manager	Champion	Investigator	Organization
Evaluation	2007	Anderson	Bernhard	Perrin	UofU

Description

Slippery pavements around the state were analyzed to determine if corrective Techniques are needed. Dr. Perrin worked with region personnel to establish needed activities.

Status: Complete

State Funded

Project ID Code AM03.003

Evaluation Study Of Advanced Signal Warning Devices

Objective	Anticipated Completion	Project Manager	Champion	Investigator	Organization
Evaluation	2007	Lindsey		Schultz	BYU

Description

Evaluate the safety impacts of installing an advance-warning device, to warn drivers along high-speed corridors that a green signal is about to change.

Status: In-progress

Federally Funded

Project ID Code AM05.001

Evaluation Of The UDOT Weather Operations/RWIS Program Phase 1

Objective	Anticipated Completion	Project Manager	Champion	Investigator	Organization
Evaluation	Dec 2008	Anderson	Patterson	Xianming	WTI

Description

This project will examine the cost-effectiveness of Weather Operations and RWIS at UDOT. Early findings show that the program is very productive and valuable.

Status: In-progress

Federally Funded

Project ID Code AM05.004

Express Lane Genetic Algorithm Model And Evaluation

Objective	Anticipated Completion	Project Manager	Champion	Investigator	Organization
Evaluation	2008	Lindsey	Park	Martin	UofU

Description

Evaluate the traffic flow and efficiency impact of converting the existing I-15 high occupancy vehicle (HOV) lanes to high-occupancy toll (HOT) lanes using a VISSIM traffic simulation model

Status: In-progress

State Funded

Project ID Code AM06.007

TRAFFIC OPERATIONS AND SAFETY

Variable Speed Limit Sign Study

Objective	Anticipated Completion	Project Manager	Champion	Investigator	Organization
Discovery	12/07	Hsiao	Peterson	Inter Plan	

Description

Evaluate variable speed sign and measure the effectiveness of the sign at the construction zone. Potential recommendations to UDOT of using variable speed signs at all construction zones.

Status: In-progress

State Funded

Project ID Code AM07.006

Adaptive Signal Control Phase 5

Objective	Anticipated Completion	Project Manager	Champion	Investigator	Organization
Evaluation	2008	Lindsey	Kinnecom	Martin	UofU

Description

Evaluation of the adaptive signal control computer program to verify it reduces commute time.

Status: In-Progress

State Funded

Project ID Code UT01.401B

Access Management Performance Index

Objective	Anticipated Completion	Project Manager	Champion	Investigator	Organization
Evaluation	2007	Anderson	Boschert	Schultz	BYU

Description

This study developed a index that can predict the locations where access management techniques can have the greatest benefit to the traveling public. A decision tree was created to aid in the selection of these tools.

Status: Complete - Final report being reviewed

Federally Funded

Project ID Code UT05.503

Advanced Warning Signal Site Selection Evaluation Matrix

Objective	Anticipated Completion	Project Manager	Champion	Investigator	Organization
Standard	2007	Lindsey	Montoya	Schultz	BYU

Description

Develop guidelines to determine which intersections warrant the installation of an advanced warning signal.

Status: In-progress

Federally Funded

Project ID Code UT05.606

Calibration And Validation Of I-15 VISSIM Model

Objective	Anticipated Completion	Project Manager	Champion	Investigator	Organization
Modeling	2008	Lindsey	Rasband	Martin	UofU

Description

Build, calibrate, and validate a VISSIM traffic simulation model for the I-15 corridor from SR-201 to University Parkway. This effort was merged with the Express Lane Project (AM06.007)

Status: In-progress, being extended for a second phase

State Funded

Project ID Code UT06.507

Evaluation Of The Safety And Design IHSDM By FWHA

Objective	Anticipated Completion	Project Manager	Champion	Investigator	Organization
Evaluation	2008	Anderson		Saito	BYU

Description

The IHSDM will be applied to two corridors where crash numbers and rates may be Reduced. The value of the IHSDM will be determined and recommendations made for use by UDOT.

Status: On-going

State Funded

Project ID Code UT06.602

Safety Analysis Of Fatigue And Drowsy Driving

Objective	Anticipated Completion	Project Manager	Champion	Investigator	Organization
Evaluation	July 2008	Anderson	Hull	Schultz	BYU

Description

An analysis of the effectiveness of the Drowsy Driving program will be conducted. Recommendations will be made for future programs.

Status: On-going

Federally Funded

Project ID Code UT06.603

Transportation Pool Fund Projects

The fourteen Pooled Fund projects that UDOT is participating in at the beginning of FY 2008, and the two projects which were completed in FY2007, are shown below. Some of these FY2008 projects are on-going, and others are new during this fiscal year. UDOT is the lead state in six of these sixteen Pooled Fund projects, and these are shown first in the list. In the remaining projects, UDOT is participating in a non-lead role.

UDOT LEAD

Transportation Management Center

Objective	Anticipated Completion	Project Manager	Champion	Investigator	Organization
Management	2010	Fazio	Kinnecom	MRF Associates	

Description: Find solutions to common transportation/traffic management centers problems.

Status: In-progress | NON-LEAD | Project ID Code SPR-2(207)

Pavement Markings

Objective	Anticipated Completion	Project Manager	Champion	Investigator	Organization
Evaluation	Completed	Fazio	Berg	Various	

Description: Evaluate performance of various traffic markings products available in the market. Products are being evaluated at various test section locations of participating states.

Status: Complete - Evaluating data | LEAD | Project ID Code SPR-3(094)

WASHTO-X

Objective	Anticipated Completion	Project Manager	Champion	Investigator	Organization
Tech Transfer	2008	Fazio	Wakil	Boiling	USU

Description

Several western states have joined to learn from each other methods and ideas on various aspects of the Transportation business.

Status: In-progress | LEAD | Project ID Code TPF-5(017)

Western Alliance for Quality Transportation Construction (WAQTC)

Objective	Anticipated Completion	Project Manager	Champion	Investigator	Organization
Training	2008	Fazio	Biel	Pending	

Description

Development and refinement of construction inspection and material testing training program - a technology transfer cooperative of multiple western states and FHWA.

Status: In-progress | LEAD | Project ID Code TPF-5(064)

Dynamic Passive Pressure on Abutments and Pile Caps

Objective	Anticipated Completion	Project Manager	Champion	Investigator	Organization
Discovery	2009	Hsiao	Bischoff	Rollins	BYU

Description

Develop passive force-deflection relationships for static and dynamic loads; 2. Measure damping coefficients for pile caps and backfills as a function of displacement; 3. Determine the effect of pile cap connection details on abutment stiffness; 4. Evaluate existing design recommendations and develop modifications to improve prediction of measured response.

Status: In-progress | LEAD | Project ID Code TPF-5(122)

Western Maintenance Alliance

Objective	Anticipated Completion	Project Manager	Champion	Investigator	Organization
Share Info	2011	Fazio	Clarke	UDOT	

Description

Scanning tours of partner states maintenance facilities, to share technologies and methods.

Status: In-progress | LEAD | Project ID Code TPF-5(145)

PROJECT PARTNER (NON-LEAD)

Aurora Program

Objective	Anticipated Completion	Project Manager	Champion	Investigator	Organization
Evaluation	On-going	Fazio	TOC	Iowa DOT	

Description

International collaborative research in the field of road and weather information systems, for integrating state-of-the-art road weather forecasting technologies.

Status: In-progress

NON LEAD

Project ID Code SPR-3(042)

Long term performance specific pavement study traffic data collection

Objective	Anticipated Completion	Project Manager	Champion	Investigator	Organization
Evaluation	2009	Fazio	Materials	Mactec	

Description

Collection of pavement design and relative performance data to evaluate the mix designs

Status: In-progress

NON LEAD

Project ID Code TPF-5(004)

Pacific Northwest Snow fighters

Objective	Anticipated Completion	Project Manager	Champion	Investigator	Organization
Information Sharing	2010	Fazio	Maintenance	Washington State	

Description

Evaluate longevity and cost evaluation effectiveness of corrosion inhibitors added to deicers - Evaluate the performance of various deicers based on corrosion inhibitors and additives

Status: In-progress

NON LEAD

Project ID Code TPF-5(035)

Transportation Curriculum Coordination Council (TCCC) Training Management and Development

Objective	Anticipated Completion	Project Manager	Champion	Investigator	Organization
Training	2009	Fazio	Materials	NHI	

Description

Facilitate management of the transportation Curriculum Coordination Council (TCCC) at the national level, including development of curriculum and core training.

Status: In-progress

NON LEAD

Project ID Code TPF-5(046)

Long term maintenance of LRFD

Objective	Anticipated Completion	Project Manager	Champion	Investigator	Organization
Standards	2011	Fazio	Structures	AASHTO	

Description: Maintaining AASHTO LRFD Structures standard specification

Status: In-progress | NON LEAD | Project ID Code: TPF-5(068)

Clear Roads

Objective	Anticipated Completion	Project Manager	Champion	Investigator	Organization
Evaluation	On-going	Fazio	Maintenance	Wisconsin DOT	

Description: Conduct field testing and evaluation of sensing and communication technologies in various field conditions and organizational structures

Status: In-progress | NON LEAD | Project ID Code: TPF-5(092)

Evaluation of the Safety Edge

Objective	Anticipated Completion	Project Manager	Champion	Investigator	Organization
Evaluation	Complete	Fazio	Traffic and Safety		Iowa State Univ

Description: Evaluate the use of safety edge or edge wedge to prevent or reduce severity of pavement edge drop-off related crashes. Before and after evaluation

Status: Complete | NON LEAD | Project ID Code: TPF-5(097)

Development of Performance Properties of Ternary Mixes

Objective	Anticipated Completion	Project Manager	Champion	Organization
Discovery	2010	Fazio	Materials	Univ of Utah, Iowa State Univ

Description: Transportation Pool Fund study by Iowa Department of Transportation and Iowa State University, studying cement mixes with other cementitious materials. (This project prioritized in the VTRAC process as UT07.306 and is listed in the "New Project" section.)

Status: In-progress | NON LEAD | Project ID Code: TPF-5(117)

PROJECT PARTNER (NON-LEAD)

Junction Loss Experiments for Square / Rectangular Storm Sewer Junctions and Storm Ceptors

Objective	Anticipated Completion	Project Manager	Champion	Investigator	Organization
Discovery	Unknown	Fazio	Hydraulics	Turner Fairbanks	HWY Research Cntr

Description: Investigate energy looses through polygonal junctions and stormceptors

Status: Solicitation Open, Project not yet initiated

NON LEAD

Project ID Code Sol-1166

Long term performance specific pavement study traffic data collection

Objective	Anticipated Completion	Project Manager	Champion	Investigator	Organization
Evaluation	2009	Fazio	Materials	Mactec	

Description: Procure, nationally, the simple performance test fro highway agencies to characterize superpave asphalt mixtures; provide support in training to use SPT; evaluate nationwide implementation and use of SPT

Status: Solicitation Open, Project not yet initiated

NON LEAD

Project ID Code Sol-1170

section

4

Research Budget

RESEARCH BUDGET

The total research budget for Fiscal Year 2008 is $3.4 million, consisting of State Planning and Research (SPR) funds from the Federal Highway Administration, State matching funds, State Administration and Construction funds, and other federal and state sources. The specific amounts of funding from each source is shown on Table 2, "Research Budget - FY08". The SPR funds shown include those amounts from previous years which are either obligated but unspent or unobligated. Federal funds and State funds are shown separately, since these have different fiscal years and separate administrative controls.

Of the $3.4 million total research budget, funds are allocated to support various Federal programs, including NCHRP, TIG, TRB, and NTPEP, and the Local Technical Assistance Program (LTAP). Most of the remaining funds, about $2.81 million, is allocated for funding research projects, both continuing projects and new projects. This amount also includes the Research Division overhead costs, which are folded into research project costs, as allowed by Federal regulation. The overhead charges constitute about 41% of the total project amounts shown. The various budget expenditures are shown on Table 2.

Several research projects also benefit from funds provided through two University Transportation Centers (UTC), as described in Section 2, but these amounts are not shown in the research budget. In these cases, specific project budgets are reduced by the matching funds provided by the UTCs, and the contracts written to the corresponding universities reflect the reduced amounts. The UDOT Research Budget is based on the contract amounts.

The 24 new projects initiated for Fiscal Year 2008, are shown on Tables 3 and 4. Table 3 lists the 17 new projects which will be funded with federal

TABLE 2: RESEARCH BUDGET - FY 2008

FEDERAL PROGRAM	REVENUE	DISBURSEMENTS	NET
State Planning and Research (SPR) - FY 08 (L560)	$1,231,870.00		
Utah Construction Fund (20% match for FY08 SPR)	$307,967.50		
State Planning and Research (SPR) - FY07 Obligated Unspent	$502,453.00		
Utah Construction Fund (20% match for FY07 SPR Unobligated)	$125,613.25		
State Planning and Research (SPR) - FY 07 Unobligated (L560)	$50,177.65		
Utah Construction Fund (20% match for FY07 SPR Unobligated)	$12,544.41		
State Planning and Research (SPR) - FY 05 Unobligated (H560)	$28,143.37		
Utah Construction Fund (20% match for FY05 SPR Unobligated)	$5,628.67		
Res Study Nondestructive Testing (I-15 Ph 4)	$35,804.83	$35,700.00	
Highways for Life Program	$225,000.00		
FY07 Local Technical Assist Program (LTAP)	$86,877.79	$173,755.58	
Utah Construction Fund (50% match for FY07 LTAP)	$86,877.79		
Product Demonst. Showcase (LTAP PDS) - FY06 Obligated Unspent	$18,750.00	$18,750.00	
Continuing Research Projects - FY08 costs		$1,385,557.80	
New Research Projects (UTRAC & other) - FY08 costs		$564,570.00	
Pooled Fund Contributions - Lead State		$80,000.00	
Pooled Fund Contributions - Non-Lead State		$85,000.00	
TIG		$5,000.00	
TRB		$87,565.00	
NTPEP		$6,000.00	
NCHRP		$270,758.00	
FHWA Peer Exchange		$5,000.00	
Subtotal:	**$2,717,708.27**	**$2,717,656.38**	**$51.89**
STATE PROGRAM			
State Administration / Construction	$681,900.00		
Continuing Research Projects - FY08 costs		$348,610.50	
New Research Projects (UTRAC & other) - FY08 costs		$309,400.00	
Experimental Features Projects		$8,000.00	
UTRAC Workshop		$15,800.00	
Subtotal:	**$681,900.00**	**$681,810.50**	**$89.50**

SPR funds, and Table 4 lists the seven new projects which will be funded with state money. As described in Section 3, these 24 new projects were proposed and prioritized through the annual UTRAC Workshop selection process. These two tables list the Project Identification Code (PIC), project title, the discipline area primarily served by the project, the original project budget (without overhead), and the budget proposed for Fiscal Years 2008 and 2009 (with overhead). Original budgets are preliminary, and are often altered as the detailed scope of work for the specific project is developed. Further, the projected budgets for FY 2007 and FY 2008 may not reflect the entire budget for a project which spans more than those two years.

Detailed summaries of each of the new projects, including the objectives and descriptions, principal investigators, project managers, champions, expected completion dates, funding source and current status, are shown in Section 3 under "New Projects". Those summaries are organized by discipline served, and ordered within each discipline by PIC number. As indicated in that section, the full problem statements for these projects are published in the 2007 UTRAC Workshop Proceedings.

Fifty projects initiated in previous years will be continuing into Fiscal Year 2008. Table 5 shows the 38 continuing projects which are funded with federal funds. All of these are funded with SPR funds except one which is funded from the I-15 National Test Bed allotment. Table 6 shows the 12 continuing projects which are funded from state sources. As with the new projects, these two tables list the PIC, project title, discipline area, original budget, and budget amounts proposed for Fiscal Years 2008 and 2009. More detailed summaries of each of these continuing projects are shown in Section 3 under "Continuing Projects".

In Fiscal Year 2008, UDOT will participate in 14 Pooled Fund projects. These are shown on Table 7. For five of these projects, UDOT will take a lead role in managing the project. These five are listed at the top of the table. In a few cases, funding for these Pooled Fund projects will come from sources other than the Research Division budget. In those cases, the project budget amounts are shown as zero. More detailed summaries of each of these projects are shown in Section 3 under "Transportation Pooled Fund Projects".

The total budget amounts for Fiscal Year 2008 shown on each of the Tables 3 through 7 are listed in Table 2 on the corresponding expenditure lines.

UDOT also performs research efforts using FHWA Innovative Bridge funds. Several of those projects are currently underway, initiated in past years. Although the Research Division assists with the management and coordination of these projects, the funding is applied for and controlled by the Structures Division of UDOT, and these amounts are not shown on the Research Division budget.

TABLE 3: NEW PROJECTS FEDERAL FUNDING

PIC No.	Project Title	Discipline	Original Budget	Proposed FY08 Bdgt	Proposed FY09 Bdgt
UT07.101	Evaluation of the Effect of Variable Advisory Speed Systems on Queue Mitigation in Work zones	Construction	$65,000	$25,500	$85,000
UT07.107	Machine Control Guidance	Engineering Services	$65,000	$25,500	$85,000
UT07.401	Determining Wildlife Use of Wildlife X-ing Structures Under Different Scenarios	Environmental	$220,000	$68,000	$153,000
UT07.704	Improved Stability and Consolidation Assessment of Embankments	Geotechnical	$70,000	$42,500	$76,500
UT07.708	Shaking Table Testing of EQ Drains	Geotechnical	$40,000	$17,000	$51,000
UT07.905	Retrofitting Culverts and Fish Passage	Hydraulics	$142,000	$37,400	$102,000
UT07.210	Snow Fence Configurations to Allow for Close proximity to Protected Areas	Maintenance	$30,000	$8,500	$42,500
UT07.305	Occurrence of Water Vapor Flow in Non-Frost-Susceptible Aggregate Base Materials	Materials	$40,000	$25,500	$42,500
UT07.306	Optimization of Mixture Designs using Ternary Blends of Cementitious Materials	Materials	$60,000	See Pooled Fund List	
UT07.501	Evaluating The Level of Accuracy of Truck Traffic Data on State Highways	Planning	$45,000	$34,000	$42,500
UT07.504	Economics and Project Prioritization	Planning	$35,000	$20,400	$39,100
UT07.801	Accelerated Bridge Construction and Prefabricated decks	Structures	$150,000	$102,000	$153,000
UT07.805	Design Methodology for Repair of Pre-stressed Concrete Girder Ends with FRP Composites	Structures	$60,000	$42,500	$59,500
UT07.806	The Synthesis of Design Guidelines for Corrosion Resistant Reinforced Concrete	Structures	$30,000	$20,400	$30,600
UT07.601	Crashes in the Vicinity of Major Crossroads	Traffic Ops & Safety	$40,000	$25,500	$42,500
UT07.604	Development of a Decision Support Tool for Assessing Vulnerability of Transportation Networks	Traffic Ops & Safety	$120,000	$51,000	$153,000
UT07.605	Evaluation of Optimal Traffic Monitoring Station Spacing on Freeways	Traffic Ops & Safety	$50,000	$18,870	$32,470
				$564,570	**$1,190,170**

TABLE 4: NEW PROJECTS - STATE FUNDING

PIC No.	Project Title	Discipline	Original Budget	Proposed FY08 Bdgt	Proposed FY09 Bdgt
UT07.402	Tire Noise on I-215 East	Environmental	$15,000	$17,000	$8,500
UT07.204	In-situ Culvert Rehabilitation /Synthesis Study and Field Evaluation	Maintenance	$100,000	$110,500	$59,500
UT07.208	Costs of Winter Maintenance on Asphalt vs. Concrete Pavements	Maintenance	$20,000	$13,600	$20,400
UT07.301	Cold Temperatures and Fatigue Quality Control Test for Asphalt Mixes	Materials	$100,000	$51,000	$51,000
UT07.304	Flexible Pavement - Structural Condition Index	Planning	$14,000	$23,800	$0
UT07.509	Retention of Core Competencies	Planning	$30,000	$25,500	$25,500
UT07.809	Isolation Bearings	Structures	$41,000	$68,000	$42,500
				$309,400	$207,400

TABLE 5: CONTINUING PROJECTS - FEDERAL

PIC No.	Project No.	Project Title	Division	Original Budget	Proposed FY08 Bdgt	Proposed FY09 Bdgt
AM07.001	5H05452H	Freeways To Fuel: A Novel Approach To Biofuels Production	Administrative	$52,000	$24,140	$0
UT05.401	5H05434H	Design & Develop Of A Context Sensitive Visual Resource Assessment System	Environmental	$88,000	$30,116	$55,371
UT06.404	5H05441H	Development Of A Habitat Quality Index	Environmental	$210,000	$37,869	$59,500
TB98.029a	5H05415H	Long Term Monitoring Of I-15 Embankment	Geotechnical	$150,000	$42,500	$136,471
TB01.401	5073511H	Load Rate Effect On Axial	Geotechnical	$150,000	Funded by I-15 Test Bed Funds	
TB01.409	5073513H	I-15 Testbed Prog. Dev.	Geotechnical	$55,000		
UT98.504	5H05411H	Down-Drag Of Piles	Geotechnical	$30,000	$34,000	$20,868
UT05.703	5H05428H	Solitation 950: Dynamic Passive Pressure On Abutments & Pile Caps	Geotechnical	$210,000	See Pooled	Fund List
UT05.706	5H05435H	Geophysical Methods To Prioritize Mitigation Options For SR-9 At Coal Hill Landslide	Geotechnical	$19,950	$10,200	$10,200
UT06.705	5H05449H	Improved Performance Of MSE Walls	Geotechnical	$25,000	$25,500	$24,939
UT06.706	5H05444H	Stone Column Treatment With Wick Drains In Silty Sands	Geotechnical	$30,000	$17,340	$42,330
UT06.710	5H05448H	Development Of MSE Wall Inspection Plan Based On Failure Mode Analysis & Risk Assessment	Geotechnical	$40,000	$18,773	$27,200
UT05.402	5H05431H	Bridge Scour Counter Measures Ph.2	Hydraulics	$50,995	$76,500	$0
UT06.901	5H05446H	Fish Passage At Utah Culverts: Strategy, Assessment, And Design	Hydraulics	$74,166	$68,000	$125,350
UT06.902	5H05450H	Estimating Peak Flow Statistics For Ungaged Streams, Phase 2	Hydraulics	$35,000	$21,250	$38,250
UT06.201	5H05447H	Install Avalanche Monitoring System	Maintenance	$100,000	$0	$34,000
UT06.206	5H05439H	Evaluation Of Overlay Rutting Susceptibility (9mm Asphalt Vs. 12.5mm Asphalt)	Maintenance	$35,000	$0	$0

- Table 5 is continued on page 60 -

- continued from page 59 -

TABLE 5: CONTINUING PROJECTS - FEDERAL - CONTINUED -

PIC No.	Project #	Project Title	Division	Budget	FY08 Bdgt	FY09 Bdgt
UT03.201	5H05422H	Utah LTPP Monitoring	Materials	$50,000	$0	$0
UT03.203	5H05421H	Materials Characterization For The AASHTO '02 Pavement Design Guide	Materials	$150,000	$42,500	$93,500
UT05.301	5H05430H	Asphalt Binder Uniformity	Materials	95,000	$104,380	$62,900
UT06.306	5H05440H	Validate Hamburgh Wheel Tracker Using Field Tested Superpave Mixes	Materials	$60,000	$28,900	$34,000
AM03.002	5H05417H	Web-Based Pavement Condition & Traffic Data	Planning	$43,000	$17,000	$0
AM03.004	5H05418H	Extract Vehicle Classification From TOC Video	Planning	$46,400	$25,500	$42,500
UT06.506	5H05442H	Seismic Vulnerability And Emergency Response Of UDOT Lifelines	Planning	$80,000	$27,200	$108,800
AM04.001	5H05416H	Preventive Deck Joint & Surface Treatment Strategy	Structures	$80,000	$0	$0
AM07.002	5H05660H	Various Scanning Tours	Structures	$70,000	$42,500	$76,500
AM07.003	5H05653H	Rapid Bridge Replacement - 4500 So.	Structures	$50,000	$224,400	$73,100
AM07.004	5H05654H	Bridge Visualization Showcase	Structures	$50,000	$127,500	$0
AM07.005	5H05655H	Studies On Corrosion Of Steel Reinforcement In Concrete Bridge Decks	Structures	$21,000	$27,200	$23,800
TB01.404	5H05419H	N/D Eval. Method To Determine Residual Stress In Girders	Structures	$175,000	$42,500	$133,085
TB01.405	5H05420H	Structural Health Monitoring Of I-15	Structures	$140,000	$39,100	$51,748
UT05.702	5H05433H	Programming Of Strong Ground Motion Instrumentation Of New Bridges	Structures	$30,000	$21,590	$53,720
UT05.801	5H05429H	Investigation Of Improvement Of Deck Concrete Mix Design & Curing Practices	Structures	$71,000	$42,500	$59,500
UT06.801	5H05445H	Evaluation Of Bridges For Seismic Retrofit	Structures	$120,000	$42,500	$0
UT06.802	5H05451H	Calibration Of AASHTO'S New Prestress Loss Design Equations	Structures	$44,621	$17,000	$59,500
AM05.001	5H05424H	Evaluation Study Of Advanced Signal Warning Devices	Traffic Ops & Safety	$47,000	$17,000	$7,650
AM05.004	5H05458H	Evaluation Of the UDOT Weather Operations/RWIS Program Phase 1	Traffic Ops & Safety	$35,000	$42,500	$0
UT05.606	5H05427H	Advanced Warning Signal Site Selection Evaluation Matrix	Traffic Ops & Safety	$35,000	$13,600	$7,140
UT06.603	5H05443H	Safety Analysis Of Fatigue And Drowsy Driving	Traffic Ops & Safety	$71,000	$34,000	$34,000

TABLE 6: CONTINUING PROJECTS - STATE

PIC No.	Project No.	Project Title	Division	Original Budget	Proposed FY08 Bdgt	Proposed FY09 Bdgt
AM03.001	8RD0715H	Evaluate Work Zone Traveler Information Systems	Construction	$80,000	$14,510	$45,390
UT05.101	8RD0717H	Mitigate Queue Lengths In Work Zone Traffic Control	Construction	$18,000	$0	$0
UT06.102	8RD0726H	Quality And Safety During Nighttime Construction Activities	Construction	$10,000	$0	$0
UT06.103	8RD0728H	Gis Project Tracking Website	Construction	$95,000	$0	$0
UT02.403A	8RD0713H	Smart PDA- Implementation Van Software	Materials	$75,000	$0	$0
UT05.206	8RD0718H	Skid Index Trigger Values	Planning	$10,000	$34,000	$0
UT06.302	8RD0730H	Asset Improvement Tracking – (Construction History)	Planning	$30,000	$17,000	$0
AM06.007	8RD0735H	Express Lane Genetic Algorithm Model And Evaluation	Traffic Ops & Safety	$122,000	$109,701	$106,964
AM07.006	8RD0837H	Variable Speed Limit Sign Study	Traffic Ops & Safety	$140,000	$91,800	$0
UT01-401B	8RD0725H	Adaptive Signal Control Phase 5	Traffic Ops & Safety	$45,000	$30,600	$0
UT06.507	8RD0731H	Calibration And Validation Of I-15 VISSIM Model	Traffic Ops & Safety	$30,000	$0	$0
UT06.602	8RD0729H	Evaluation Of The Safety And Design IHSDM By Fhwa	Traffic Ops & Safety	$47,700	$51,000	$8,500
			TOTAL:		$348,611	$160,854

TABLE 7: TRANSPORTATION POOLED FUND PROJECTS

PIC No.	Project No.	Project Title	Division	Original Budget	Proposed FY08 Bdgt	Proposed FY09 Bdgt
LEAD STATE POOLED FUND PROJECTS						
PL02.207		Transportation Management Center	Traffic Ops & Safety	$50,000	$25,000	$0
PL05.017	5084301D	WASHTO-X Video Conferencing Transfer Phase 2	Technology Transfer	$100,000	$10,000	$0
PL05.064	5104701D	Western Alliance For Quality Transportation TPF-5(064)	Materials	$10,000	$10,000	$0
PL05.122	Note 2	Dynamic Passive Pressure On Abutments And TPF-5(122)	Geotechnical		$35,000	$0
PL05.145	Note 1	Wstrn Maintenance Partnership	Maintenance	$0	$0	$0
				TOTAL:	$80,000	$0
NON-LEAD STATE POOLED FUND PROJECTS						
PL03.042		Aurora Project SPR-3(042)	Traffic Ops & Safety	$25,000	$25,000	$0
PL05.004		Long Term Performance (LTPP) Specific	Materials		$0	$0
PL05.035		Pacific Northwest Snowfighters	Maintenance		$0	$10,000
PL05.046		Transportation Curriculum Coordination	Materials		$5,000	$0
PL05.068		Long Term Maint Of Load And Resistance Factor Design Specs TPF-5(068)	Structures	$20,000	$0	$20,000
PL05.092		Clear Roads	Maintenance		$25,000	$25,000
PL05.117		Development Of Performance Properties Of Ternary Mixes	Materials		$15,000	$0
SOL 1166		Junction Loss Experiments For Square/Rectangular Storm Sewer Junctions And Stormceptors	Hydraulics		$10,000	$10,000
SOL 1170		Implementation Of The Simple Performance Test (SPT) For Superpave Validation	Materials	$10,000	$5,000	$0
				TOTAL:	$85,000	$65,000

section

5

Product Evaluation

PRODUCT EVALUATION

At the beginning of FY2008, fifteen field evaluations were underway on a variety of products, including pavement markings, pavement patching materials and sealants, corrosion monitoring systems, roadside markers and signs, new asphalt pavement mix designs, and drainage facilities.

These products have been placed on active UDOT roadways, and are monitored by personnel from the UDOT Research Division to determine their performance. The fifteen product evaluations underway are listed below.

Gilsonite in Asphalt on US-40

Estimated Completion	Manager	Champion	PI
3/31/2007	Sharp	Tim Biel	Sharp

Description: Compare performance of gilsonite vs. lime in asphalt.

Status: Active

Project ID No. X(03)09

Pavement Marking Test Deck on I-215

Estimated Completion	Manager	Champion	PI
12/31/2007	Berg	Dan Betts	Berg

Description: Compare retroreflectivity readings for various pavement markings.

Status: Active

Project ID No. X(04)01

TechCrete Patches on Ramp

Estimated Completion	Manager	Champion	PI
11/30/2007	Berg	Dave Eixenberger	Berg

Description: Evaluater performance of TechCrete as a spall repair on bridge deck.

Status: Active

Project ID No. X(04)02

Thinner Delineators on I-80

Estimated Completion	Manager	Champion	PI
10/31/2008	Sharp	Jack Mason	Sharp

Description: Evaluate performance of thinner gauge steel delineator posts.

Status: Active

Project ID No. X(04)06

Thinner Delineators on SR-118

Estimated Completion	Manager	Champion	PI
10/31/2008	Sharp	Les Henrie	Sharp

Description: Evaluate performance of thinner gauge steel delineator posts.

Status: Active

Project ID No. X(04)07

Urban Mile Markers on 4500 South

Estimated Completion	Manager	Champion	PI
11/30/2007	Berg	Robert Stewart	Berg

Description: Evaluate various alternative for mile markers in urban settings.

Status: Active

Project ID No. X(05)06

Deck Corrosion Monitoring on SR-79

Estimated Completion	Manager	Champion	PI
7/31/2013	Berg	Boyd Wheeler	

Description: Evaluate corrosion rates of black vs. epoxy coated bar in two bridge decks.

Status: Active

Project ID No. X(05)07

Microseal on Concrete on I-70

Estimated Completion	Manager	Champion	PI
12/1/2007	Sharp	Larry Gay	Sharp

Description: Evaluate performance of slurry seal over failing concrete pavement.

Status: Active

Project ID No. X(06)02

ABT Trench Former Drain in American Fork

Estimated Completion	Manager	Champion	PI
11/30/2010	Berg	Michael Fazio	Berg

Description: Evaluate self cleaning ability of four different invert slopes.

Status: Active

Project ID No. X(06)03

Three Polyurea Spall Repair Products on Ramp

Estimated Completion	Manager	Champion	PI
11/30/2007	Sharp	Jack Mason	Sharp

Description: Evaluate performance of 3 different polyurea spall repair products on concrete on-ramp.

Status: Active

Project ID No. X(07)01

Snow Predator Snow Fence on SR-31

Estimated Completion	Manager	Champion	PI
5/31/2008	Berg	Lynn Bernhard	Berg

Description: Evaluate performance of snow fence installation

Status: Active

Project ID No. X(07)03

Snow Predator Snow Fence on SR-264

Estimated Completion	Manager	Champion	PI
5/31/2008	Berg	Lynn Bernhard	Berg

Description: Evaluate performance of snow fence installation

Status: Active

Project ID No. X(07)04

Grooved Contrasted Waterborn on I-80

Estimated Completion	Manager	Champion	PI
10/31/2009	Berg	Dan Betts	Berg

Description: Compare 2 different bead specifications on grooved in water born on concrete.

Status: Active

Project ID No. X(07)06

'Install and Evaluate Inlaid ATM & Briteline Traffic Marking Tape and Waterborne Traffic Marking Paint

Estimated Completion	Manager	Champion	PI
12/31/2010	Sharp	Rukhsana Lindsey	Sharp

Description: Compare the effective life of the two tapes and one water born marking.

Status: Active

Project ID No. X(08)01

Grooved WB Paint and Messages on Moab Main St.

Estimated Completion	Manager	Champion	PI
11/30/2010	Berg	Vincent Liu	Berg

Description: Measure retroreflectivity of grooved water borne paint and thermoplastic pavement messages on concrete pavement

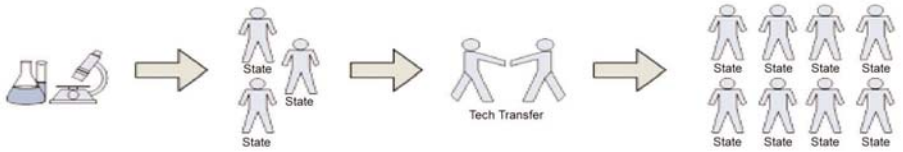
Status: Active

Project ID No. X(08)02

section

6

Technology Transfer



Technology Transfer Services At UDOT

Mission & Vision

The ongoing Technology Transfer Program is a crucial aspect of our business. Providing UDOT personnel with the most current applied science enables them to utilize the best methods and techniques through the following initiatives.

- Literature/Document Searches
- White papers
- State of-the-Art Surveys
- Technology Transfer Presentations
- Research Project Implementation
- Technology Transfer Library Sessions
- Best Practices Evaluation
- Literature Dissemination
- Quarterly Newsletters
- Electronic Document Storage to the Web

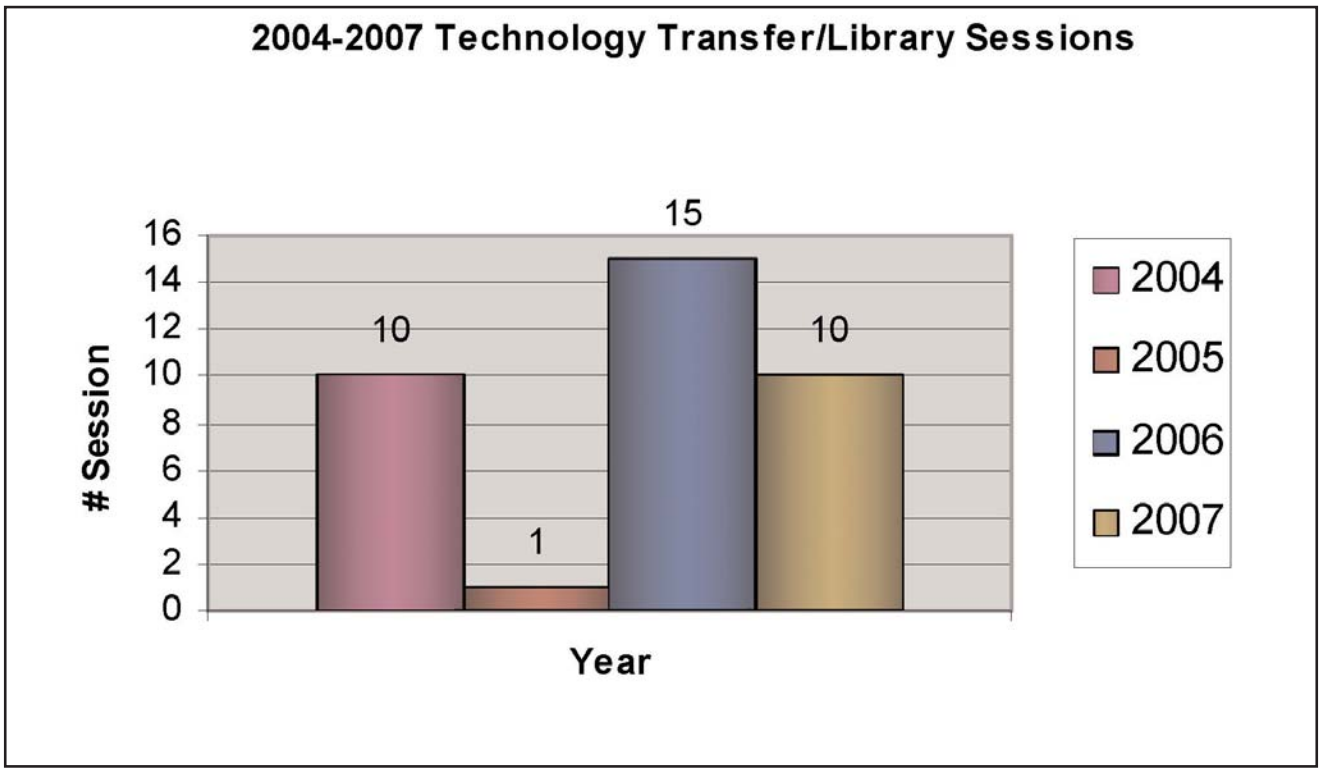
Library Technology Transfer Sessions

This is another opportunity to conduct informal information exchanges on variety of technical topics, policy, program, and procedural issues within UDOT through library sessions. It is low cost opportunities for other UDOT colleagues, FHWA field office and Local Technical Assistance Program Board Members (LTAP) and some University professors. We broadcast the sessions to our regions and send out invitations. We place flyers and posters in the atrium, elevators and by the library for promotion purposes. The following are some of the past and future technology transfer sessions.

The following are some of the past and future technology transfer sessions.

DATE	EVENTS	PRESENTERS
1/17/2007	Future Engineering	Blaine Leonard
2/6/2007	Photo Log	Jeff Erickson and Al Warr
2/20/2007	RWIS	Ralph Patterson
3/13/2007	Winter Maintenance	Lynn Bernhard
3/27/2007	Good Roads Cost Less	Gary Kuhl
4/11/2007	Research Funding Opportunity	Research Team
6/26/2007	Tech. Transfer and New Products	Ken Berg, Barry Sharp, Abdul Wakil
8/14/2007	UDOT Biodiesel Initiative	Ralph Whitesides, Dallas Hanks
9/25/2007	FHWA/UDOT Risk Assessment	Richard Miller, Bryan Cawley (FHWA)
11/27/2007	Standards	Patti Charles, Robert Miles and Barry Axelrod

COMMENTS: All events were video conferenced to Regions



Wedbinar Sessions

Date	Description	Sponsor
5/3/2007	Deterioration and Repair of Concrete	ASCE
5/30/2007	The Engineers' Survival Kit - Tips for Moving Ahead and Keeping Your Head while Practicing the "Art" of Engineering	ASCE
6/14/2007	Ethics: The Road All Engineers Must Follow	ASCE
8/1/2007	Personal Time Management: Work Smarter, Not Harder.	ASCE
8/8/2007	From Project Engineer to Project Manager: Look Before You Leap	ASCE
8/15/2007	Congestion Pricing Web Briefing (Module 1).	ITE
8/22/2007	Congestion Pricing Web Briefing (Module 2).	ITE
8/29/2007	Congestion Pricing Web Briefing (Module 3)	ITE
9/13/2007	Intersection Design and Channlization	ASCE
10/23/2007	Using a Knowledge-Based Expert System (USLIMITS2) to Establish Speed Limits for all Road Classes	TRB

WASHTO-X Videoconferencing

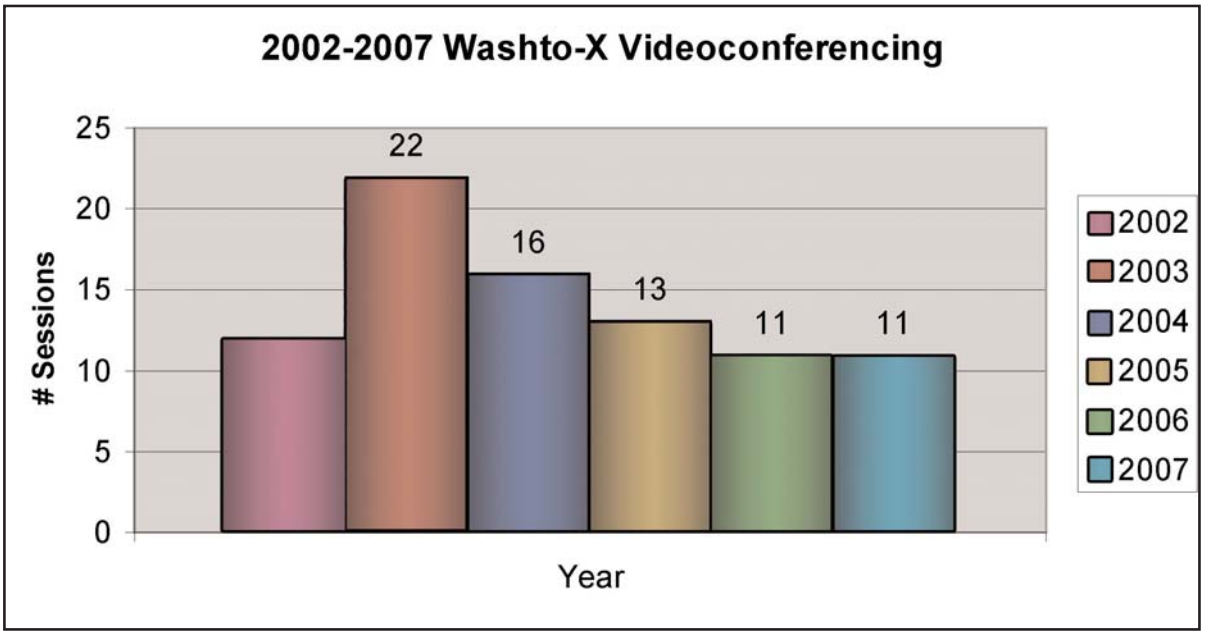
The WASHTO-X Program is a video conference-based peer exchange program for transportation personnel. Experts with similar interests are invited to relate how they conduct and mange their programs, and describe successes and lessons learned in their past experience. Peer exchange is encouraged for identifying potential solutions to common problems. Potential topics are suggested by experts in the participating state DOTs.

The WASHTO-X Program is a two-year pooled fund research study providing WASHTO State DOT's and the associated field offices of the Federal Highway Administration the opportunity to conduct informal information exchanges among transportation personnel through Videocommunications. The study is patterned after the information exchange program of the TEL-8 Transportation Communication Network that is currently being sponsored by five core WASHTO State DOT's and four state universities.

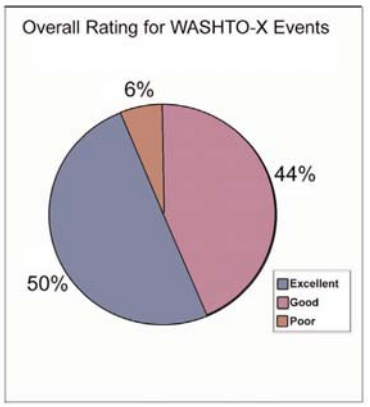
The principal goal of this study is to provide low cost opportunities for other WASHTO State DOT's and FHWA field offices to participate in an expanded videocommunications program featuring:

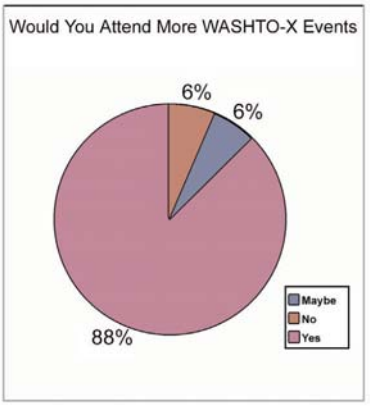
- Information exchanges among transportation professionals, officials, universities, LTAP Centers and associates.
- Peer exchanges on a variety of technical topics.
- Transportation information exchanges on policy, program, and procedural topics and issues.

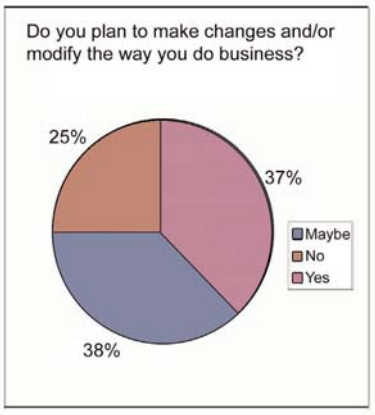
The number of sessions held each year for the past six years is depicted in the following pages.

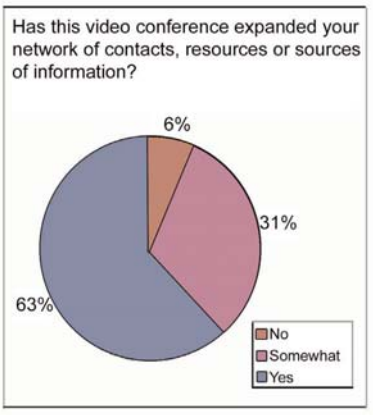


Participants in WASHTO-X sessions are asked to rate their experience and indicate how useful the session has been to them. The following charts summarize the responses given by the participants.



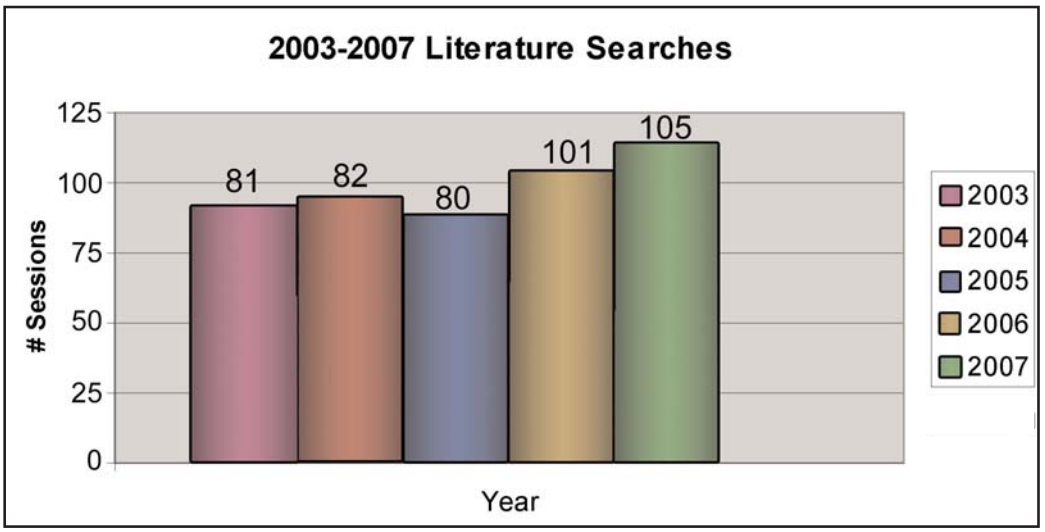




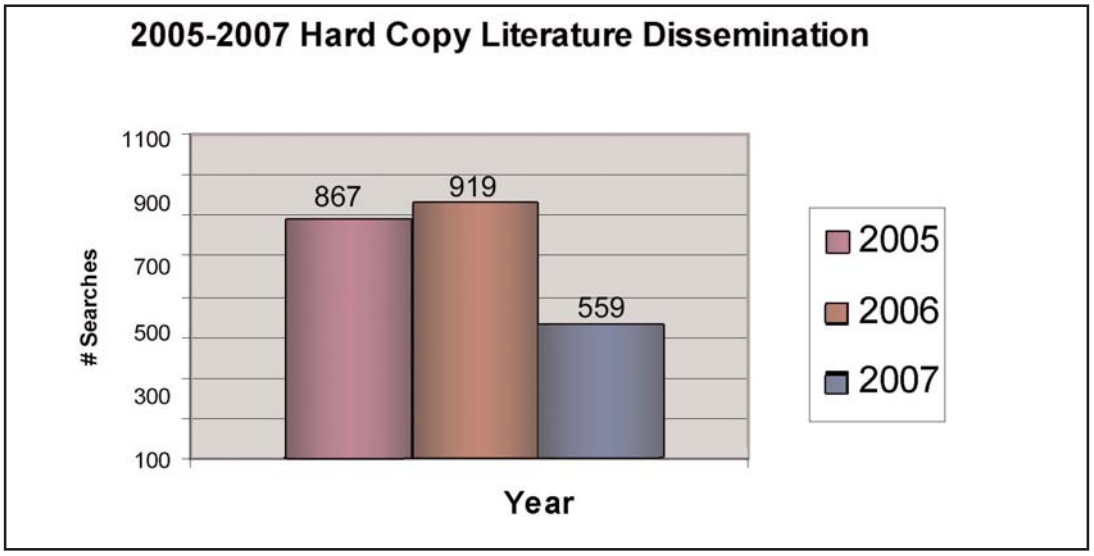


Literature Searches

Literature/Document searches are a crucial aspect of our business. UDOT personnel request information on specific topics, and the Research Division searches the available literature to find the requested information. The chart below indicates the number of literature searches performed each year for the past five years.



Hundreds of technical and professional publications arrive at UDOT headquarters each year, addressing a broad range of topics and interests. The Research Division reviews each document and sends it to the appropriate parties throughout the Department. The following chart indicates the number of paper documents distributed each year for the past 3 years.



FHWA Priority, Market Ready Technologies Implementation Status for UDOT

High Priority, Market Ready Technologies and Innovations are identified and provided by the Federal Highway Administration (FHWA). The list below includes the available technologies that have been or are being developed. The status column indicates wether UDOT has decided ti implement the listed technology. This list is intended to be a living list and updated periodically.

TECHNOLOGY	STATUS
Accelerated Construction Technology Transfer (ACTT)	Has been deployed
Asset Management Guide	Will be deployed 2008
Dispute Resolution Guidance for Environmental Streamlining	Has been deployed
Continuous Flight Auger (CFA) Piles	Has not been deployed.
Expanded Polystyrene (EPS) Geofoam	Has been deployed
511 Traveler Information	Has been deployed
DYNASMART-P	Dave Kinnecom reviewing
ITS Deployment Analysis System (IDAS)	Has been deployed
Maintenance Decision Support System (MDSS)	Maintenance & TOC to test
QuickZone	Has been deployed
Air Void Analyzer (AVA)*	Has been deployed
Pavement Smoothness Methodologies	Has been deployed
Highway Economic Requirements System, State Version (HERS-ST)	Ahmad Jaber reviewing '08
Improved Decision-making Using Geographic Info. Systems	Has been deployed
Transportation, Economics, and Land Use System (TELUS)	Ahmad Jaber reviewing
Fiber-Reinforced Polymer (FRP)*	Has been deployed
Load and Resistance Factor Design and Rating of Structures	Has been deployed
Prefabricated Bridge Elements and Systems (PFBES)*	Has been deployed
Cable Median Barriers*	Has been deployed
PedSafe	Sharon Brigs researching
Red Light Cameras	Will not be deployed
Road Safety Audits (RSA)*	Has been deployed
Roundabouts	Has been deployed
Rumble Strips	Has been deployed
DEPLOYED - 16	**IN PROGRESS - 6** **WILL NOT BE DEPLOYED - 2** **TOTAL=24**

AASHTO TIG Submittals

AASHTO is soliciting Focus Technologies. Innovative technologies that are ready for implementation are accepted for consideration from State and local departments of transportation, organizational units of AASHTO (AASHTO members include member departments and associate members), and the Federal Highway Administration. Interested producers of innovative technologies must work with eligible submitters who have successfully used these technologies. The following list represents the technologies used successfully by UDOT and submitted to AASHTO for their consideration.

AASHTO TIG Submittals

TECHNOLOGY	SUBMITTED BY
User Impacts of Fast Track Construction	Doug Anderson
Electronic Plan Room	Michelle Page
Design Build Traffic Signal Projects	Michelle Page
Construction Field Books	Michelle Page
Crash Data Delivery System	Doug Anderson
Cable Barrier System	Michelle Page
EPS-Block Geofoam	Blaine Leonard
Development and Evaluation of High-Fidelity Simulator Training for Snowplow Operators	Michelle Page
Categorical Exclusion (CE) Electronic Documentation System	Jerry Chaney
Safety Index	Glen Ames
Wildlife Connectivity Across Utah's Highways	Paul West
Pavement Condition System Database	Bill Lawrence
LD3 Technology	Daniel Hsiao

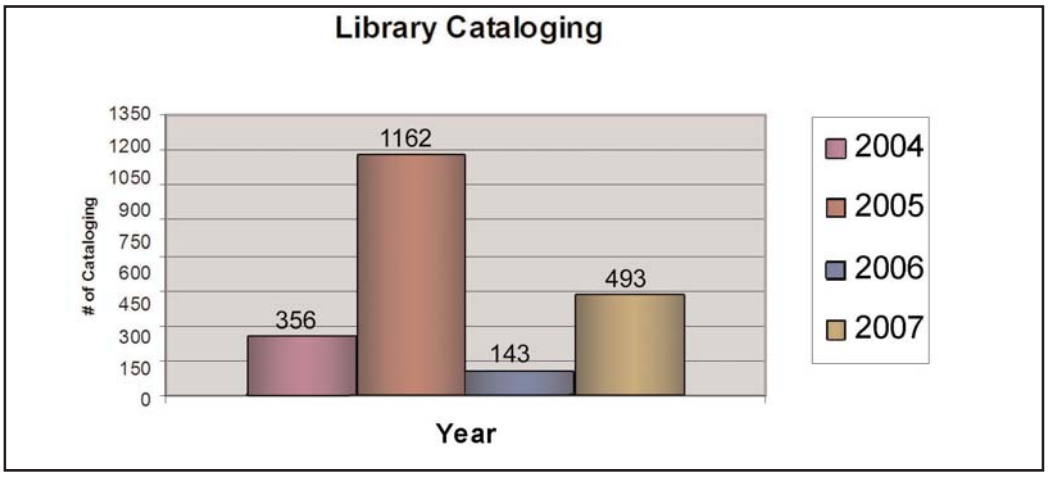
Lester F. Wire Library

The Utah Department of Transportation Lester F. Wire Library is an important part of our Division. The goal of the UDOT Lester Wire Library and its staff is to significantly enhance the Department's Technology Transfer initiatives.

Services that Lester Wire Library Offers

- Literature/Document Searches
- Research Projects Implementation
- Best Practices Evaluation
- Technical Syntheses
- Nationwide Transportation Library Access
- Informal Technology Transfer Sessions
- Electronic Document Storage and Retrieval
- State-of-the-Art Reviews
- Monthly Washto-X Videoconferencing
- Ongoing Display of some historical Library Collections
- Interlibrary Loans
- A state-of-the Art Technology Transfer/Training conference room equipped with a projector, interactive board, and a computer
- A touch screen computer for easy accessibility for all customers
- Welcoming environment for reading, newspapers, and performing literature/document searches.

The library houses over 18,000 publications, newsletters, magazines, audio cassettes and videos. The library website has information about current transportation issues and links to national transportation libraries. The library has 1.25 full time employees. The chart below indicates the number of new documents cataloged each year for the past four years.



section

7

Appendices

State of Utah

JON M. HUNTSMAN, JR.
Governor

GARY R. HERBERT
Lieutenant Governor

DEPARTMENT OF TRANSPORTATION

JOHN R. NJORD, P.E.
Executive Director

CARLOS M. BRACERAS, P.E.
Deputy Director

CERTIFICATION OF COMPLIANCE

I, Rukhsana Lindsey, Director of Research and Bridge Operations, State of Utah Department of Transportation, do hereby certify that the State of Utah is in compliance with all requirements of 23 U.S.C. 505 and its implementing regulations with respect to the research, development, and technology transfer program, and contemplate no changes in statutes, regulations, or administrative procedures which would affect such compliance.

Rukhsana Lindsey

Rukhsana Lindsey, Director of Research and Bridge Operations

1/9/08

Date

Calvin L. Rampton Complex, 4501 South 2700 West, Salt Lake City, Utah 84119-5998
telephone 801-965-4000 • facsimile 801-965-4338 • www.udot.utah.gov

U.S. Department of Transportation
Federal Highway Administration

UTAH DIVISION

2520 West 4700 South, STE 9A
Salt Lake City, UT 84118-1880

January 16, 2008

In Reply Refer To:
HDA-UT

Ms. Rukhsana Lindsey
Utah Department of Transportation
4501 South 2700 West
Salt Lake City, UT 84119

Subject: Approval of 2008 Research Work Program

Dear Ms. Lindsey:

Our office has reviewed the 2008 Research Work Program submitted on January 9, 2008. Based on our review the work program is approved.

This work program nullifies all previous work programs and outlines those projects and activities that are authorized to start in Federal Fiscal Year 2008 or continue from previous work programs during FFY 2008. This work program will end on September 30, 2008.

Please ensure that the Federal Fiscal Year 2009 work program is submitted to this office before September 15, 2008, to ensure our office will have time to review and approve the work program prior to the beginning of the fiscal year October 1, 2008.

Sincerely Yours,

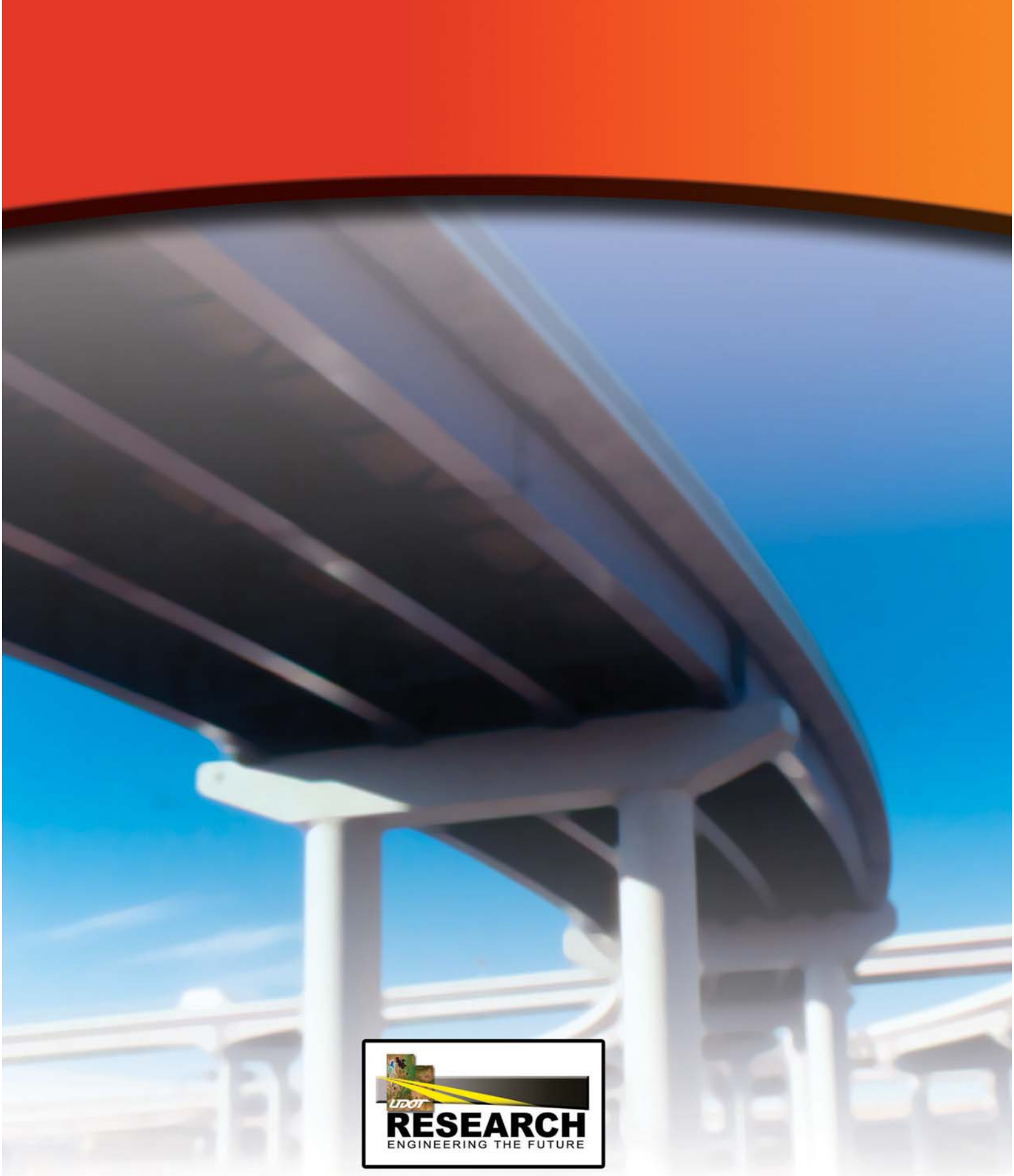
Steven A. Call

Steven A. Call, P.E.
Program Development Team Leader Engineer

cc: (electronic copy only)
Michael Fazio, UDOT Research
Blaine Leonard, UDOT Research

File: SPR Research

MOVING THE AMERICAN ECONOMY



Utah Depatment of Transportation
Research Division
4501 South 2700 West 4th Floor
Salt Lake City, Utah